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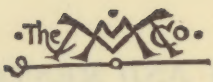
PSYCHOLOGY AND MENTAL HYGIENE FOR NURSES



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PSYCHOLOGY AND MENTAL HYGIENE FOR NURSES

BY

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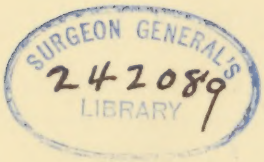

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G. H. C.

AND

ANNA C. JAMMÉ

IN TOKEN OF THANKS
FOR THEIR VISION
OF THINGS OF THE SPIRIT,
IN NURSING

PREFACE

The purpose of this book is to show the place of psychology and mental hygiene in the work of the nurse. The *facts* of psychology are known and practiced by us all: the *name* is what we who are nurse educators have fought shy of, heretofore.

Now the time has come when psychology is a household word among the laity, and the effect of the mind on health and behavior has become generally recognized; so the profession of nursing, which, with the medical profession, has the greatest use of any for knowledge of human nature and its needs, must keep up with the procession.

It has been my intention throughout the following chapters to present the subject of psychology so simply that it will appeal to the pupil nurse by virtue of its practical value to her work, and its applicability to her own every-day problems.

It has been written with the average nurse in mind, after many years of instructing and loving her. If the teacher should find it too elementary, there is a vast field at her disposal for enlargement of the topics presented.

My old pupils will recognize much of this book as material which they have heard from me before, and which I hope they are now in their turn teaching to others.

There is a sequence in the subject matter, endeavoring to show first the firm foundation upon which psychology rests in the sciences of anatomy, physiology and biology; second the place of the mind in its relation to our physical bodies; and third the great law underlying all biological development, by which the race moves ever forward toward its spiritual heritage.

Following this plan, the earlier chapters of the book are more technical, while the later ones incline more to growth and behavior.

Thanks are due to teachers of old, to doctors and professors whose "thunder" I may possibly have stolen, and whose wisdom I hold in grateful remembrance.

Mary B. Eyre
Minnequa Hospital, Pueblo, Colorado

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PSYCHOLOGY AND MENTAL HYGIENE FOR NURSES

PSYCHOLOGY AND MENTAL HYGIENE FOR NURSES

CHAPTER I

INTRODUCTION

Derivation.—The term "Psychology" is derived from two Greek words, translated "Mind or Soul" and "Theory."

Definition.—Psychology is the scientific study of mind; it has to do with the behavior of living things. Therefore psychology may be called the study of the mind in its relation to behavior.

This includes the close relation existing between mind and body, which is of such especial importance to nurses, doctors, and to all whose work it is to promote health.

It is a subject full of living interest, because far from being a dry and theoretical thing, psychology deals with the real every-day life not only of ourselves, but of everyone with whom we come in contact, and shows us why people, (and even animals), think and behave as they do.

We thus come to understand the very well-springs of human thought and action, and we can apply our knowledge of mind in exceedingly practical ways, as

we shall see when we realize that we cannot nurse, teach, recite lessons, take a journey, assist a doctor, enter a patient's room, join our friends in recreation, or even pass a stranger on the street, without making and receiving a mental impression, and affecting one another in some way.

There are three terms used in psychology for our mental relation to any subject; they are COGNITION, or knowledge of it; AFFECTION, designating our feeling in regard to it; and CONATION, striving toward or against it.

Development through Physiology.—New discoveries and experiments in physiology during the past few years, have modified our ideas of teaching psychology. Take, for example, the researches of Dr. Cannon*, showing the effect on animals of fear, anger and other emotions, by vastly increasing the secretion of the supra-renal glands, which secretion in turn, acts upon muscular tissue and augments the power of the individual in fighting or running away from its enemies.

Pawlow, a Russian biologist, has experimented with the digestive processes of dogs, and has seen the saliva and gastric juice flow with energy at the sight of tempting food, or cease entirely from the effects of fear.

We have a common saying that the "eyes glisten" with pleasant anticipation; we weep, from sorrow and sometimes from rage; we blush from mortification or joy; and the dry throat of "stage fright" is

* Professor of Physiology, Harvard University.

so well known, that the glass of water on the table of the public speaker has become part of the established ritual of a "town meeting."

Now these are all *physiological* reactions, changes in circulation and glandular secretion, due directly to mental states. They can be measured by appropriate instruments.

Pupil nurses can think of many more instances for themselves, and we shall discuss these facts in detail, later on.

We can see now why the new psychology, which is of practical value in our work, is taking the place of the old academic and purely theoretical teaching.

We can see furthermore that every *act* of the body must begin first as a *thought,* or at least as an impulse from the nervous system; and we know therefore that mind and body are so closely related that every mental state registers itself upon cells and tissues of our bodies, whether we will it, or no.

Development through Science.—There is always fascination in exploring undiscovered country. Since our bodies have developed from the lowest forms of life into the wonderfully complex machines which they now are, science has been at work mapping out the structure (anatomy); observing the action and function of the various parts (physiology); testing to find of what materials we are made (chemistry); and studying the problems of the growth and development of living organisms (biology).

Our bodies have not changed perceptibly since

mankind has been intelligent enough to know much about them, and their general form will doubtless remain the same.

It is our *minds* which are still largely undiscovered country. From the little already learned about them, scientists are led to believe that the future evolution of the race will take place through mental development.

Character Formation.—It has been said that we ourselves, that is, the sum total of our characters, are the condensed histories of all that we have lived since birth.

The sensations, emotions, and thoughts which we have experienced from earliest infancy, have all placed themselves on record in our brains.

Each time a thought is repeated, the brain cells along which that thought has to travel, become a little more accustomed to discharging energy in just that particular direction; so that by and by the cells respond more readily to the same stimulation, and a pathway is made for that thought or impulse.

Analogy to a Field of Grain.—You know how in a field of waving grain, it is easy to trace the way where one has passed several times.

The paths in our brain cells may be compared to that grain field (except that the cells do not show visible signs of the passage of the thought, in the cell structure). We only know that each repetition has caused those cells in the given sequence, to transmit more readily the impulses passing over them.

Example of Repetition.—Take for example a child

learning music. At first the little black dots on certain lines and in certain spaces must be laboriously picked out on the black and white keys of the piano, and the fingers made to strike just those keys and no others. This requires the most painstaking concentration; after several repetitions, it becomes easier to associate the notes with the right keys, and to use the appropriate fingers. From this on, progress becomes more rapid, until a difficult and complicated piece of music can be played, even while the attention of the player may be partially distracted.

What has happened, in the brain cells of the musician? The brain pathways have become so well travelled, that action has come to be almost automatic. This is the physiological reason for habit formation, and for automatic action.

Formation of Habits.—Repeated thoughts make habits; and habits of thought form character.

SUMMARY

Psychology is now taken to mean the study of mind in relation to behavior. It is of especial interest to nurses, because it shows the way in which people's minds work, and the sources of thought trends, leading to action. It includes the relation existing between mind and body. This has been strikingly demonstrated by recent experiments showing the effect of mental states on secretion, which in turn react upon different functions and metabolisms of the body, and influence circulation. Psychology teaches

that every bodily act has its origin in the nervous system, which includes what we know as "mind". Scientific study of the body has developed through the sciences of anatomy, physiology, chemistry, and biology. Psychology, the crowning knowledge, will be that of the mind and its laws of action, and their resulting behavior. Future development of the race will be along these lines of mental development. Character is the condensed history of all that we have lived since birth.

Thought habits are formed through repeated discharges of energy along certain lines in the brain, forming brain pathways in the synapses. Repetition causes the nervous impulse to be transmitted more readily. This is the physiological reason for automatic action and for the formation of any habit. Technical terms used to describe our mental relation to a given subject are Cognition, Affection, and Conation.

CHAPTER II

HABIT FORMATION

Brain Anatomy and Physiology the Basis of Psychology.—We shall see how psychology is based scientifically upon the study of the anatomy and physiology of the brain.

We remember that the central nervous system consists of the brain and cranial nerves, and the spinal cord and the nerves coming from it. (Fig. 1.)

Cerebrum.—The thinking part of the brain is the cerebrum, containing according to various estimates anywhere from five million to a billion nerve cells.

Neurones.—A nerve cell, or neurone, has a number of projections called dendrites from its body of sensitive plasm, like the tentacles of an octopus; and one elongated projection called the axis-cylinder, which is the nerve fibre extending from the neurone. This fibre unites with fibres from other nerve cells, to form a bundle of fibres enclosed in a sheath, which we call a "nerve" or "nerve trunk". These nerve fibres carry incoming and outgoing impulses to and from the nerve cells. The free extremities of the dendrites are branched into tiny projections called "brush ends".

In appearance a nerve cell is thus somewhat simi-

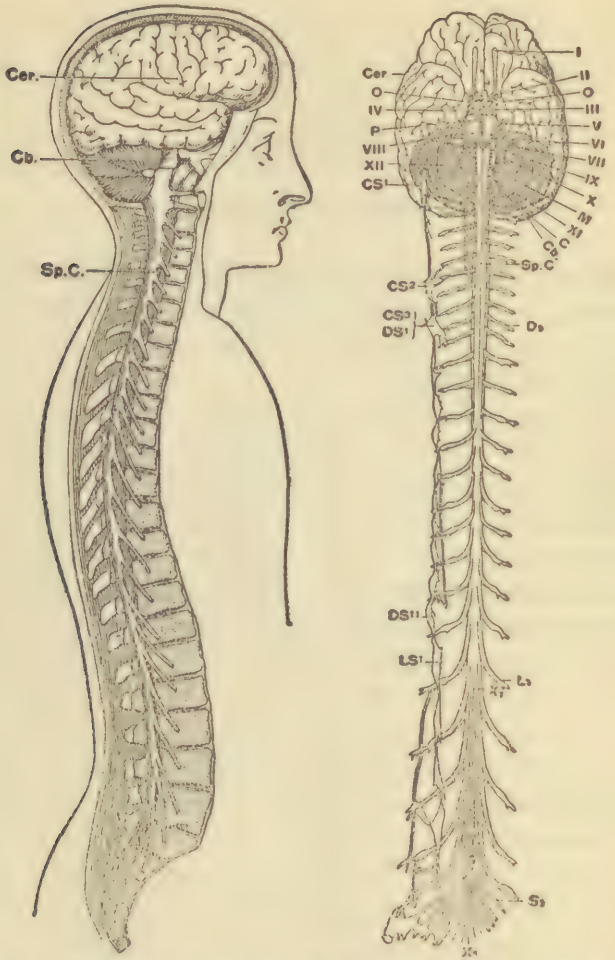


Fig. 1.—The nervous system as a whole. On the left it is seen from the side in position in the body; on the right exposed and seen from the front. *Cer.*, the cerebrum; *Cb.*, the cerebellum; *Sp.C.*, the spinal cord; *P*, the pons; *M*, the medulla. The other letters designate nerve trunks going to the central nervous system and connections with the sympathetic system. (After Bougery.)

lar to the dried tumble-weeds, which blow about on the western prairies, with their branching finger-like projections, and one long stem.

Although depending on the fibres (axis-cylinders) for messages from the periphera, nerve cells have communication with one another by means of their finger-like processes ("brush ends" of the dendrites) which inter-penetrate without quite touching, as if the fingers of your two hands were spread out and dove-tailed into one another's spaces. These points of inter-penetration are termed "synapses", and communication therefore is sometimes said to take place between the synapses.

Nervous Impulse.—We do not know what the impulse is, which passes from one cell to another, but it is a form of nervous energy which has been likened to a discharge of electricity, though it is more probably electro-chemical in character. The latest teaching is that there are periodic waves to the impulse, corresponding to vibrations in the stimulus.

This impulse passes along the axis-cylinder and from one synapse to another, and the impulses so transmitted from cell to cell are what we know as sensation and thought.

Let us trace the path, in imagination, which thought makes by way of the synapses in the brain cells to form a habit.

Let us have a picture in our minds of the cerebrum, and suppose we take cells 1, 2, 5, 7, 8, 10, 11, 13, 14, as the ones over which a certain thought of despondency has repeatedly travelled. We will call

this a bad thought habit, and trace its course in black. (Fig. 2.)

Now let us see how this can be corrected, and a thought habit of courage substituted for it. This may be done, simply by making a new pathway in the brain, making new connections of synapses and using another set of cells! We will suppose cells 3,

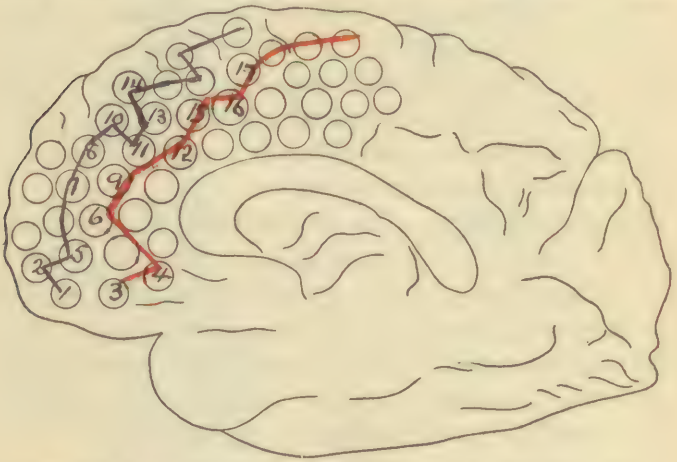


Fig. 2.—Diagrammatic thought paths in the cerebrum.

4, 6, 9, 12, 15, 16, 17, to be those used by the thought of courage and "I CAN", which is to take the place of "I CAN'T". The new pathway we will trace in red.

When a synapse pathway is blocked or switched over to another track, we call it an "inhibition".

What power nurses can have to help their patients in breaking up bad habits! It is sometimes hard to leave the path of least resistance and to stop the

wrong thought in time, and it takes too, infinite patience to impress the new thought track upon the cells, so that they will give a ready response; but we have seen that it can be accomplished, and the most firmly rooted habit overcome. The expression "line of thought", can thus be literally true.

The phenomena of sudden change of character, conversion, and mental cures, are all based upon this principle, which is none the less the law of God, because it can be explained by the law of natural science.

We should rather recognize this law, and use it scientifically for health.

Any line of thought or treatment which moves us out of a rut, and into another set of brain cell, will accomplish the desired result.

A good illustration of this is shown by the following true story, which is taken from the medical records of a noted physician, Dr. Sidis.

Case of Rev. Thomas Hanna.—In the year 1897, there lived in a Connecticut town a young minister, whose name is given as Thomas C. Hanna.

One day while alighting from his carriage, he was thrown to the sidewalk with great violence, and was carried home unconscious. When he awakened, he had lost his memory. Familiar surroundings were strange to him; he did not know his father or any of his relatives or friends, did not know where he was, and furthermore could not pronounce the simplest words, ask for what he wanted, or make himself understood. A denizen of another planet could not

have been more of an alien than this young man! He had to be taught to walk, and the only difference between his education and that of a baby, was that he learned to speak and co-ordinate his muscular movements very much more rapidly than an infant could do.

He was taken to New York, and placed under the care of Dr. Sidis, who tried forms of suggestion to recall him to his former self. While in his second, or later personality, Mr. Hanna went about New York, attended theaters, learned to play on a musical instrument (he formerly had been, as we say "without an ear" for music), danced, and enjoyed himself with the other young people in the house where he boarded.

Thus, several weeks passed, until Dr. Sidis after repeated treatments, finally succeeded in completely restoring Mr. Hanna to his original personality.

Then some one asked him how he felt, and Mr. Hanna made an answer which deserves our attention. It was to the effect that he felt well, *except for being stiff and sore from his fall, which he thought had taken place only two or three days previously!*

When we remember that a period of about six weeks had passed from the time of the accident to his recovery, during which time this young man had been dancing, and walking about New York, with entire ease, we realize that a very significant fact has been demonstrated; namely, that by returning to the old pathways in his brain cells, he had taken

up again the burden of his old aches and pains, *associated with those cells.*

Is pain, then, imaginary? By no means! What we learn from Mr. Hanna's case, is that the pathways of the old personality in his brain were forgotten, and that the sensations of pain from his fall which had been registered by cells in association with those old pathways, were likewise forgotten; so that in his new personality, which had jolted him completely out of the rut of his old paths, the cells in his brain responding to the former pain, did not give any signs of being stimulated; but when the first personality was wakened again, the cells responded to the same stimulation of pain as at first, *through association.*

Thus we see proved the fact that when certain cells have once learned to respond in a given way to any sensation, they may keep on doing so, even after the original cause has been removed, and the same sensation will be experienced, provided some stimulation arouses that particular group of cells.

Any nurse who has had experience on the surgical wards, will recall patients who complain of pain in *the amputated foot or arm.* Why is that? Because, before amputation, a pathway of painful sensation was developed in the nervous system, which, when any part of that nerve tract is stimulated, will start the impulse along the old path, and the response will be the same pain which was originally felt. This shows us that pain is largely a matter of association.

Science tells us that there are probably millions of cells in the brain, never put to use. We have much to learn about the powers that may be developed through knowledge of how to use our minds. It is as if we lived, oftentimes, in the basement or other cramped quarters in our house of life, when a whole beautiful palace is at our disposal.

We do not wish to develop other personalities, but rather to make that one of which each of us is already conscious, more stable and efficient, to the end that we may use to the fullest extent those powers which we possess. This may be accomplished by consciously striving to form new associations along helpful and healthful lines.

Second Wind.—The late Prof. William James, one of the most noted psychologists of the age, believed that we could unlock hidden stores of energy, under certain conditions, the limit of which is practically unknown. He called it going from one level of energy and strength to another, and gave the phenomenon of "second wind" as an illustration. Runners in a race, swimmers, soldiers in battle, or those engaged in physical toil, know that after the first fatigue is experienced, there comes a moment when they have a fresh access of energy, and they can then keep on for a time with easier respiration, and steadier effort.

Professor James thought that it might be possible to have a third or even a fourth "wind", as well as a second.

There is some cause, not yet clearly understood,

but undoubtedly mental, which releases these stores of energy.

We know that every discharge of energy in the brain, registers in its cells, and modifies other cells of the body, and that "mind" thus has a direct effect on "body". This effect can even be measured. Dr. Roger Vittoz, of Switzerland, says: "For every effort of the will, there is a peripheral manifestation or impulse transmitted over the efferent nerves, and felt anywhere on the surface of the body".

We shall see in the next chapter what is meant by the term "consciousness."

SUMMARY

Psychology is based directly upon study of the laws of brain anatomy and physiology. While we have not yet solved the problem of what thought is, we know the mechanism that is necessary for its transmission to be the various parts of the nervous system, and we also know of what these parts consist. The junction points of the dendrites are termed "synapses", and nervous impulse passes across these synapses to dendrites and nerve cells, making an impression on the plastic cells, which is retained and may be re-enacted, upon appropriate stimulation. Thus pathways are formed in the brain, from cell to cell, leading to the formation of "habits".

The best way to break bad habits is to substitute good ones for them, by starting new pathways in

the brain cells and persevering in them in order to make them our lines of thought in place of following the line of least resistance. This law can, and should, be utilized for health. The case of Mr. Hanna shows that even pain is largely a matter of association and that under certain conditions we can change associations so as to live in an entirely new set of brain cells. This is sometimes done without our conscious co-operation, as (in the instance of Mr. Hanna), by accident or injury; but it may also be done to a great extent through conscious thought, by forming new and healthful mental habits. We have yet much to learn about the possibilities which we possess, in the use of our minds.

There are new "levels of energy" which may be opened up, enabling us to put forth additional effort, when we apparently have reached the limit of our powers. "Second wind" is an example of this. The effect of cerebral action upon the body is capable of measurement.

CHAPTER III

CONSCIOUSNESS

Consciousness has been defined in a great many ways. In simple language, it may be called the recognition of one's own individuality.

We say a patient regains consciousness after he has had an anesthetic. We mean by that, that he is now in a state of *awareness* of himself; that he knows who he is, and the conditions which immediately surround him. He may or may not retain memory of the past.

Consciousness Likened to the Scene from a Window.—Consciousness may be likened to that part of the landscape which we can view through the frame of a window; there is much that we cannot see, which may be classed as the vast realm of the Unconscious. (This we will discuss later.)

Another simile for consciousness is that of a stream, as for example the Gulf Stream, which keeps its identity flowing through the uncharted ocean.

Elements of Consciousness.—The elements entering into consciousness are sensations of many and various kinds, emotions, feelings, thoughts and ideas. Sensations may be there and we may not be conscious of them, as when the soldier who does not feel the pain of his wounds while fighting, succumbs

to agony when removed from the scene of battle. The sensation of pain has then thrust itself into his consciousness. The nerves were carrying messages of pain from the wounds all the time he was fighting, but they did not get through into consciousness.

Anoci Association.—Surgeons have made use of this knowledge by blocking the sensory nerves through the use of local anesthetics, at and around the point of incision. Thus no painful sensations are transmitted to the brain during the operation, as may otherwise happen even while the patient is asleep. According to this theory, which has been somewhat less credited of late, the danger of surgical shock resulting from pain, is lessened. The method is called that of "Anoci association" (the word anoci meaning literally "absence of harm") and was first advocated by Dr. Crile of Cleveland.

Drs. Cannon and Baumberger found during the war that traumatic shock follows maceration of tissue, where the products of broken down proteins from the tissue cells are allowed to get into the blood stream. If these compounds do not reach the circulation, there is no shock. It would seem therefore that surgical shock is not primarily of nervous origin, or directly due to nerve injury.

Subjective and Objective.—The individual who can think and feel is termed "sentient", and is the subject of his own recognition, so that his condition is termed "subjective", while the thing he thinks about is the object, and its condition is termed "objective".

"Subjective" and "Objective".—The same distinction of terms is familiar to the nurse, under "subjective" and "objective" symptoms, those of the former type being known only to the patient's own feelings, and those of the latter being concrete enough to be perceivable by others.

It is sometimes a hard matter to draw the line as to where "subjective" and objective" states begin and end, as they tend to overlap or merge into one another. We have seen that no mental state, or "subjective" symptom, can persist without affecting body tissue and thus becoming "objective".

Vice versa, an *"objective"* state may react upon the mind, and linger in the consciousness long after its original force is lost. One of the simplest examples of this in the physical world, is the flash of lightning, which must last longer in our vision than it does as a physical reality. The roll of thunder reverberates in our ears and memory, after the actual concussion has ceased to cause the air waves to impinge upon our ear drums. This is due to the fact that it takes a little time for the impression to become "set", as it were, in consciousness, upon the plastic nervous tissue. A sensation is sometimes more vivid in retrospect than at the time it occurs.

It is well known by doctors and nurses that an "objective" symptom may so weigh upon the mind of a patient that he will be made worse, especially if it be something that he has heard others speak of seriously. A "floating" kidney will cause intense

distress in the mind of a person who does not know that in its normal state the kidney is movable.

Quacks and patent medicine venders have played upon the fears of mankind until many of their comparatively harmless objective symptoms loom up like bogies to haunt them, and may be relieved as easily under judicious treatment.

Unity and Variety of Consciousness.—Every new experience joins on, in consciousness, to some other experience, so that it is impossible to have an idea that is not modified by, or is not more or less related to, the ideas immediately preceding it or following it.

Association.—This relation of one idea to another is termed "Association", and has to do with memory and the brain paths. Each association acts as a link for others. The more associations, the greater is the intelligence. There is a continuous flow of ideas going on in our minds, each separate, yet moving together and apprehended often as a whole.

Take for instance, the noise of a train of cars, moving rapidly over the rails. Does not each separate click form part of a rhythm, beaten into the brain in a definite sequence, *Clickety-clack; clickety-clack?* When you think of a song, is it each separate note that your memory hears, or the rhythmic whole which makes the music? When you look at a picture or a scene in nature, you are able to perceive more than one item at a time. An expert nurse can glance at her patient and note at once a number of

symptoms for which she is on the alert, giving her instantly a mental grasp of the patient's condition.

Unity of Consciousness. — This "at-onceness" so to speak, is what is meant by the term *"Unity of Consciousness"*, a unity that is made up of many impressions taken all together at any given moment.

With "Unity of Consciousness", however, we are always able to distinguish a difference between the various impressions, so that we know one from another; and thus along with unity, we have a *"Variety of Consciousness"*, one supplementing the other.

When the differences are sufficiently marked, so that they stand out from one another and set one another off, while still forming a consistent whole, we have the quality in consciousness called *"Clearness"*.

What a good teacher tries to do with her pupils, or a nurse-teacher with her patients, is to group together facts which bear in the same direction, and emphasize their points of contrast as well as their similarities. Shadows intensify sunshine. We can see more clearly with high lights than when objects run together in a blurred outline.

How to Study.—It is a useful thing to know how to study. Here again, we can call into action the law of association by making what may be called "memory bridges"; that is, first, by thinking carefully of the meaning of each word and phrase, then by associating each with the one leading up to it and the one following it, so as to get the ideas in a proces-

sion. One suggests the next. By thinking of a subject in all aspects, we are able to form associations in all directions radiating from that subject, and thereby we are able to anchor it firmly in our minds by a number of different links. If the ideas should be totally different, then build a bridge by suggesting to yourself something that has a connection with both, and label both ideas firmly with the connecting word, in your mind.

It is better to read a lesson over thoughtfully once or twice, hitching one idea to its next neighbors through association, than to read it glibly a dozen times trying to trust to "rote" (mechanical) memory alone. Repetition aids study; read the lesson slowly and carefully; as soon as you think it has been sufficiently learned, close the book and see how much you can remember, going back to correct the places where you have made errors. Verbal recitation during study helps recall.

We should wait a few minutes after studying one subject, before proceeding to the next, in order to allow the ideas to "set" in the nervous tissue of the brain.

We should study by wholes, rather than by parts; that is, it is better to go straight through a given lesson, and repeat it a number of times, than to try to learn a little bit at a time. The associations hold better for committing to memory a whole poem, for example, than for learning it a verse at a time and being forced to make new associations between each verse.

We can in this way make our minds alert and collected, fully aware of what we are doing, and clear in judgment. A nurse who keeps her consciousness clear and unbefuddled, will never make a mistake in medicine, chart a wrong quantity, or forget an order. In other words, she will be "present-minded", instead of "absent-minded".

Next we shall consider the various states of consciousness, which may be generally grouped under the headings of (a) sensation, (b) perception and apperception, (c) instinct, (d) feeling and emotion, (e) memory, (f) attention, (g) reason, (h) will.

We shall see how, beginning at the lowest form of consciousness, *sensation,* there is an ordered progression to the highest faculty of all, the human will, or *power to choose.*

SUMMARY

Consciousness consists in being aware of one's self as an individual. The elements entering into consciousness are sensation, emotion, instincts, perception, thoughts, and ideas.

Surgical shock is apparently due to poison in the circulation from macerated tissue.

Subjective and objective conditions are those where the individual's thought relates to himself alone, or to something outside of himself. The same distinction is made between subjective and objective symptoms, but we know that a subjective symptom may become objective because of the mind's action

upon body cells, so that it is hard to make a hard and fast line between the two states.

Objective states likewise affect the mind and consciousness. Impressions take a short time to become "set" upon the nervous system. Objective symptoms may harass the mind without warrant from actual fact. This furnishes a field for the various quacks and patent medicine vendors who prey upon the fears engendered by symptoms, many practically harmless. Such symptoms should be referred to a wise physician who understands psychology.

Unity of consciousness is made up of many impressions taken together at once. When we distinguish between the different impressions, we term the distinction "Variety of consciousness". Both considered together, contrasting differences and comparing similarities, form the characteristic termed "clearness" which is essential to successful teaching.

In learning how to study it is essential to form as many associations with the subject in hand, as possible. Read it over slowly and carefully, considering all sides; if the ideas should be totally different try to bridge over by suggesting to yourself something that may have connection with both so that an association may still be formed. Repetition of a lesson helps to impress it upon the mind. Verbal recitation as soon as it has been sufficiently learned ensures its recall. Close the book and see how much of the lesson you can remember. Then go back and correct your error. Study the whole lesson straight

through as a whole, and repeat until learned, rather than a part at a time. After learning one subject, wait a short time (five to ten minutes) before proceeding to the next.

CHAPTER IV

SENSATION—PERCEPTION—APPERCEPTION

Sensation may be defined as "an elementary mental state that is due either to the direct excitement of some sense organ and of the corresponding brain centre, or to some central brain process equivalent to a disturbance produced through a sense organ".*

Sensation soon becomes *perception* or recognition. Therefore, **perception** may be defined as *recognition of a sensation;* for example, the nerve of sight is stimulated, and we perceive that it is light. The nerve of taste responds to a sensation which we recognize as sweetness.

Apperception.—The difference between perception and apperception is less emphasized than formerly, but apperception may be defined as the power to apply former impressions to a given object. Thus, we recognize light (perception) and because of former experience, determine it to be daylight (apperception). Again, we recognize the taste of sweetness (perception) and know the object which tastes sweet to be sugar (apperception). Sometimes perception may be correct, but apperception at fault, as when we perceive a light, which we take to be daylight,

* Vide. Royce's "Outlines of Psychology".

but which is really from an electric arc shining in the window, or when we think we see a lantern among the trees and it turns out to be the harvest moon.

Faulty apperceptions are at the basis of *illusions,* of which we shall speak later.

Sensations are classified as the so-called "special senses", touch, taste, smell, sight, and hearing; and the general or organic sensations, pain, hunger, thirst, equilibrium, pressure, fatigue, muscular sense, warmth and cold. The last two are sometimes included under the term "dermal sense" because they may have reference to the skin.

Without the senses, we should have no knowledge of the world about us. A person deprived of any of the special senses through birth, accident or illness, may develop the remaining senses to a remarkable degree. Scarlet fever is an enemy to be dreaded, chiefly because it tends to loss of sight and hearing. Diphtheria tends to paralyzed muscles and loss of taste and smell. Paralysis from any cause lessens the sense of touch and muscular adjustment.

Helen Keller and Laura Bridgman were both deprived of sight and hearing by scarlet fever, but triumphed marvellously over their infirmities and proved to the world what could be done by education, particularly through the sense of touch.

Sensitiveness.—The most sensitive parts of the body are tip of tongue, lips, soles, palms and tips of the fingers. The fourth finger-tip is most sensitive, and the first least sensitive of all, because the fourth is used least and the first finger, the

"pointer" is used most, and therefore becomes more calloused.

Touch used to include pain, temperature, pressure and muscular sense, but now these have been differentiated. Pain and pressure spots occur on the skin, and may be distinguished from each other, and from cold and warm spots. (That is one reason why a carefully given hypodermic injection hurts at some spots more than others.) Contact with the cornea gives pain, but no sensation of touch. Cold spots on the body are not sensitive to warmth, and vice versa. It has recently been found that there is no separate sensation of heat due to "heat spots", but that heat is a combination of warm and cold. That is the reason why we shiver, when first getting into a warm bath. The sensation of wetness is a combination of pressure and cold. A dry rubber bag with ice in it, will relieve thirst, as long as it is held in the mouth.

Titchner says: "The pressure spots give us tickle, contact or light pressure, and pressure proper; the pain spots, itch, prick or sting, and pain proper. The cold spots give cold and cool, the warm spots lukewarm and warm; cold and warm spots together give heat; cold and pain give biting cold; cold and warm and pain give burning or scalding heat; and that is all".

Joints, muscles and tendons have nerve cells; thus, we have muscular and articular sensations of weight and movement. These are termed "*kinesthetic*" sensations. Thus a weight resting on the hand feels

heavier than if held by a string. It feels heavier if lifted slowly than quickly. It feels heavier if the other hand be clenched meanwhile.

Sensitiveness to pressure varies. The most sensitive parts are forehead, temples, back of hand and the forearm. These, according to Prof. Phillips, can detect .03 grain or .002 grain respectively, while nose and chin can detect only .6 to .7 grain. The parts most sensitive to pressure are not the most sensitive to touch.

We see from the foregoing why light pressure such as stroking or rubbing can be more soothing on a patient's forehead and forearm than on other parts of the body.

Taste.—There are four distinct tastes: sweet, sour, bitter, salt. (Alkaline and metallic are modifications of these, and are no longer considered to be separate tastes.) All the rest of taste sensations are merely distinctions of flavor, due to smell. Wine tasters and tea and coffee tasters become very expert in discriminating flavors.

Sweet is strongest at the tip of the tongue; bitter at the root; sour along the sides of the tongue; salt distributed over sides root and tip; while the middle region of the tongue is insensitive to taste.

In making tests for mental and nervous abnormality, doctors will use examples of sweet, sour, bitter and salt substances; the nurse therefore should provide sugar, vinegar, salt, and some bitter drug such as quinine.

Taste depends very largely on the sense of smell,

as may be demonstrated by loss of taste when we have a "cold in the head".

Smell.—The nasal cavities contain the cells which gave us the sensation of smell. These cells are found in two small areas of the mucous membrane situated across the top of the nasal cavities, and minute particles from substances inhaled or swallowed, float up and stimulate these cells. The stimulus must be in the form of a gas, vapor, or diffused solid.

There are more different sensations of smell than of any other sense. That is why it is sometimes said to be the keenest of all the senses. Man has ceased to depend upon his sense of smell, as do the lower animals, and therefore it has fallen into disuse. Birds are lacking in the sense of smell; as Titchner says, smell is a "ground sense", that is, it belongs close to the ground; therefore when man began to go erect, he lost his sensitiveness to smell sensations, which persist in the animals, who depend upon smell for getting their food, and who can scent their enemies from long distances. This faculty is made use of in the dog; the collie or "shepherd" dog has rather poor eyesight, but can trace his master, or find a lost sheep, solely by sense of smell. Some primitive peoples have retained their keen sense of smell, (though living under conditions that must be a severe strain upon it, in their vile smelling habitations!). Children have a keener sense of smell than older persons, and can often detect the ownership of garments or belongings, by the characteristic odor.

We see then, that this sense can be cultivated, and it is a useful one for the nurse to develop in noting the atmosphere of a sick room, whether the air be pure and fresh, or in need of ventilation.

Nurses sometimes boast that they can tell typhoid and measles by the smell. The odor of the patient's breath in diabetes, nephritis, sore throat, pulmonary disease, stomach and intestinal disorders, carious teeth, and in various forms of toxemia and of cases of poisoning, is noteworthy.

Sight.—Sight takes place in the brain, through impulses received by the eye and transmitted by the optic nerve. The rays of light enter the interior of the eye through the pupil, are focussed by the crystalline lens and strike the retina, which is an expansion of the optic nerve, and corresponds to the sensitized plate in a camera.

Vibrations of the ether make color. Thus vibrations at the rate of four hundred billions per second, or less, cause ultra red, while over eight hundred billion vibrations cause ultra violet.

Colors have hue (color tone), tint (brightness), and chroma (amount of color compared to grayness). Black and white are not classed as colors. They neutralize each other, and give grayness, which is an older sensation even than color, as the eyes of invertebrates can detect it. We judge the tint of colors in relation to grayness. The colors of the spectrum range from red, at four hundred and fifty billions of vibrations per second, through orange, yellow, green, blue, indigo and lastly violet, which

has seven hundred and ninety millions of vibrations per second. There are about thirty-three thousand sensations of color, which it is possible to distinguish. Great artists can detect many more shades of color than ordinary people, while natives of central Africa are limited in color sensations, and have but two words to describe color, red and black. Red and green are antagonists, i.e., complement each other. The green of nature is grateful, because the interior of the eye is suffused with red from the blood vessels. Any other color than green for grass or foliage would be very wearisome. Color-blindness, the inability to distinguish red from green, is due to a peculiar lack in the eye, which is transmitted by the male parent to his daughters but not his sons, and is passed on by the daughter to her sons, but not to her daughters, the female rarely or never exhibiting color-blindness herself, but being a passive transmitter of it.

Hearing.—The sensation of hearing (which probably developed from rudimentary sensations of jarring or shaking, not heard at all) is made up of two sensations, "noise" and "tone". Science is beginning to wonder if noise may not be a very complex system of tone.

Vibrations strike the ear drum or tympanum, set in motion the ossicles in the middle ear, which agitate the fluid in the cochlea of the inner ear, and its waves touch upon the filaments of the auditory nerve, which line the inner ear as moss lines a rocky cavern into which the sea waves ebb and flow. Thus,

the waves of vibration are transmitted by the auditory nerve to the brain. The cochlea of the internal ear contains fluid and the basilar membrane bearing the hair cells, by which the filaments of the auditory nerve aforesaid are stimulated.

The range of vibrations is from twelve per second to fifty thousand per second. More or less than these cannot be heard. The ordinary range is about eleven thousand vibrations per second. In music, we use only about ninety of these eleven thousand tones. "Middle C" on the piano, has 256 vibrations per second.

Noise and Musical Tones.—According to the theory which we have been taught heretofore, when the vibrations are irregular, we have *noise* while regular vibrations constitute *musical tones.*

Equilibrium tells the position of our bodies and "right-side-up-ness". It is found even in low forms of animal life; an insect placed upon its back will struggle unceasingly until it rights itself. Equilibrium is concerned with walking, holding erect, and balance, and is controlled by the fluid in the semicircular canals of the inner ear, perhaps also by the cerebellum, particularly in animals. Dizziness is a symptom due to some disturbance of equilibrium. Although the inner ear is the organ of equilibrium, equilibrium itself has nothing to do with hearing.

Muscular sense tells the amount of contraction or "tonicity" of our muscles, and we can learn to relax over-tense muscles, thus relieving fatigue. We have already spoken of muscular sense, under "kin-

esthetic", which includes muscular, articular (joint) and tendonous sensations.

One of the most important lessons a nurse can learn is to relax perfectly when she has a chance to rest. She can teach a nervous patient to "loosen up" contracted muscles, while lying in bed, and by so doing pain is often lessened and sleep will follow.

Fatigue.—Fatigue is an organic sensation caused in all probability from toxins generated by over-used muscles or nerve cells. Fatigue is shown in the cells of the brain by shrivelled nuclei, and the difference between brain cells when fatigued and as they appear after a night's rest, is much the same as that of a plant drooping for want of water and the same plant after having been revived by a shower. Fatigue can be overcome by eliminating these toxins. This elimination occurs during sleep, while the body is at rest. It can be hastened by massage, and various forms of manipulation. The Hawaiians use a form of massage called "lomi-lomi", which kneads the muscles, and will refresh a fatigued runner almost as well as sleep. Indeed, sleep is made far more refreshing by getting rid of toxins first, through such manipulation.

Pain.—Pain is nature's method of showing that something is amiss with the organism, and in the sense of warning, may be regarded as a beneficent agent, instead of an enemy.

Pain, hunger, thirst and the dermal sense are also due to some external or internal stimuli.

Stimulus.—"A stimulus is anything that acts on our nervous systems in such a manner as to produce some observable sign of nervous disturbance" (taken from Phillips' "Elementary Psychology").

Weber's and Fechner's Laws.—Two laws often quoted in works on psychology are called "Weber's and Fechner's Laws". They are not of particular value to nurses and may be summed up briefly as follows: In answer to the question "What part of any given stimulus producing a sensation must be added or deducted, in order that we may know change?", Weber's law says: "To increase or diminish the intensity of any given sensation so as to be barely able to note the difference, we must add or subtract a certain percentage of the stimulus." This constant ratio of increase or decrease of stimulus to produce change, varies with the sense to be considered. For instance, for sight, one one-hundredth of given intensity of the light; for muscular sensation, one-twentieth of the amount of energy; for pressure, noise and temperature, one-third of the given stimulus, cause barely perceptible change.

Thus, a light of one hundred candle power must be increased one candle power; for muscular sensation, a twenty pound weight must be increased one pound; while six pounds pressure must be increased two pounds before they can be detected.

Working from Weber's law as a basis, Fechner's law tries to find out what relation exists between our estimate of the amount of increase in the intensity of a given sensation, and the actual amount of

increase in the outside stimulus. For example, if there is a small amount of pain from a burned finger, how much pain will there be in an area of arm, say twenty times greater? Or again, if one thousand dollars makes me happy, will ten thousand dollars make me ten times happier?

These laws of Weber and Fechner are sometimes referred to as the "psycho physic laws", and relate to discrimination of the intensity of sensations.

It is of practical importance for us to realize then, that all the senses are needed, not only for physical but for mental life, as our contact with the thinking world comes to us through channels of sensation.

Professor Royce of Harvard says: "Higher mental training depends not on avoiding sense experience, but on selecting the right kind; and upon presenting sensory experiences in such order as to train fitting habits of movement".

Lastly, let us think for a moment of the senses as being dependent upon the limited organs through which sensations reach us. These organs have been wonderfully developed, before reaching man; in lower forms, in place of an eye, there is only a spot sensitive to light: yet there are countless shades of color too delicate for the human eye to perceive.

The ear is a marvellous instrument, yet science tells us that there are tones too fine for any human ear to hear!

After all, we see and hear and experience only what our sense organs are capable of permitting us to do, and doubtless there is an infinite number of

laws in nature in operation all about us, of which we remain in ignorance because our senses are not fine enough for their perception.

SUMMARY

Sensation becomes recognition or *perception. Apperception* includes the power to call up former impressions and apply them to a given object. *Illusions* are due to faulty apperception. Sensations include the so-called "special senses" of touch, taste, smell, sight, and hearing, together with the general or organic sensations of pain, equilibrium, pressure, fatigue, kinesthetic or muscular sense, warmth, and cold.

To the senses is due our knowledge of the world about us. Loss of any of the special senses may be compensated by extra development of some or all of those remaining. Certain parts of the body are more sensitive than others to warmth, cold, pressure, or touch. Thus the light pressure of stroking or rubbing is more soothing when applied to forehead and forearm.

There are four varieties of taste, but many distinctions of flavor. Taste is closely allied with smell. Smell is the sense more keenly developed in the lower animals and in primitive peoples than with the more highly civilized. It may be cultivated to advantage in some instances, especially by nurses, who should be alert to every phase of what concerns their patients as to ventilation or symptoms.

Sight is due to impulses conveyed to the brain by the optic nerve. Color is due to vibrations, the different rates of vibration causing different colors—from ultra red, through the spectrum, to ultra violet. More highly civilized races and more highly specialized individuals can detect a greater number of shades of color than can others.

Hearing is due to vibrations of air striking against the tympanum and being thence transmitted by the auditory nerve to the brain. The range of vibrations is from twelve to fifty thousand per second, and the regularity of the vibrations distinguishes "musical tones" from "noise". Equilibrium, though controlled by the ear, has no part in hearing. Muscular or kinesthetic sense tells the position of our bodies, the feeling of use of our muscles, and their tonicity. The relaxation of over tense muscles relieves fatigue. Fatigue is probably caused by toxins generated by over-exertion. It can be removed by removal of the fatigue-products, through elimination, which occurs normally during sleep. Pain is the warning cry of the organism that something is amiss, due to some stimulation of the nervous system.

Psycho physic laws are those of Weber and Fechner, stating respectively, that in order to change the intensity of a given sensation so as to barely note the difference, it is necessary to add or subtract a certain percentage of the stimulus, and to determine the increased amount of stimulus and our estimate of the increased amount of sensation. Higher mental training depends not on neglecting, but on

properly selecting, sense experience. However, sense itself depends on the power of the sense organs to receive and transmit. Our knowledge of the laws of our being is so far limited, and no doubt there is an infinite realm all about us which our sense organs are too clumsy to interpret for us.

CHAPTER V

INSTINCT AND EMOTION

Instinct and Emotion.—Instincts have been called *racial habits, transmitted by heredity to the individual.* They are habits which have been proven useful to our pre-human ancestors, and so have made accustomed pathways in the mental make-up of former generations of animals and men. Instincts always appear to involve consciousness, and to depend upon the higher brain centres.

Professor James says: "Man has all the instincts of all the animals, plus many more"; and gives the following comprehensive definition: "Instinct is the faculty of acting in such a way as to produce certain ends, without foresight of the ends, and without previous education in the performance".

Instinct and Reflex.—The distinction between an instinctive act and a reflex, is sometimes hard to draw, but it would seem to consist in the fact that a reflex is (1) a more simple motor act, (2) incited by some objective stimulus that is present, and (3) takes place between the motor and sensory cells of the brain or spinal cord, without conscious guidance from the higher centres.

We saw that an instinct is a persistent striving toward its end, guided by some experience or want

or craving, implying some mental action, and striving for satisfaction. Thus instinct, as we have seen, uses higher brain centres than a reflex arc demands. An example of instinct is the mating and nest building of birds; an example of a reflex, when one instantly withdraws a hand from the fire, or pulls the foot away on being tickled, or winks the eyelids when danger threatens the eyes.

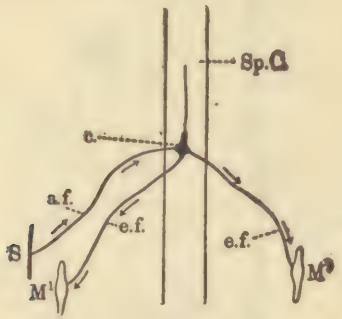


Fig. 3.—Simple Reflex Arc in Spinal Cord. S=Sensory. M=Motor. Sp. C=Spinal Cord.

In the reflex arc the stimulus passes from the sensory nerve fibres of the periphera to the sensory cells in the spinal cord or brain, and is immediately switched over to the adjacent motor cells and out through the motor fibres to the muscles, which act without reference to the thinking cells in the brain. This process is termed "A reflex", and is a short-cut of nature's for the safety of the individual.

Inhibition means checking. Painful instincts are inhibited, while pleasant ones become confirmed. The chick will not peck a second time at anything disagreeable.

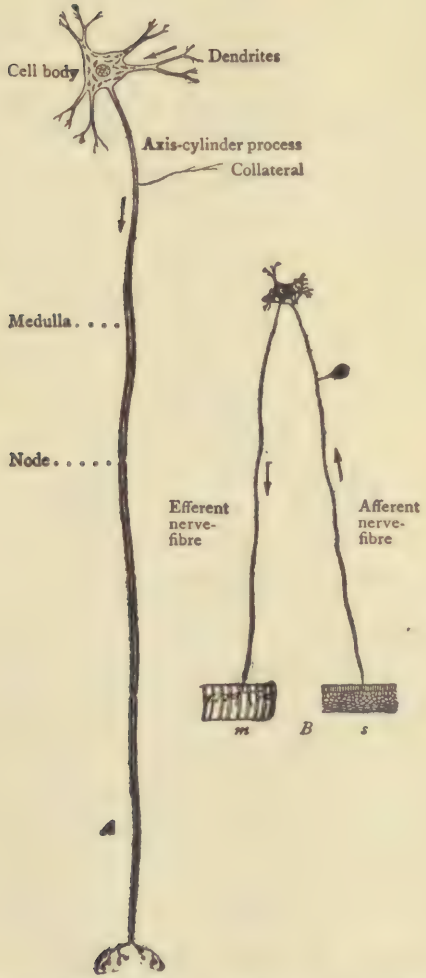
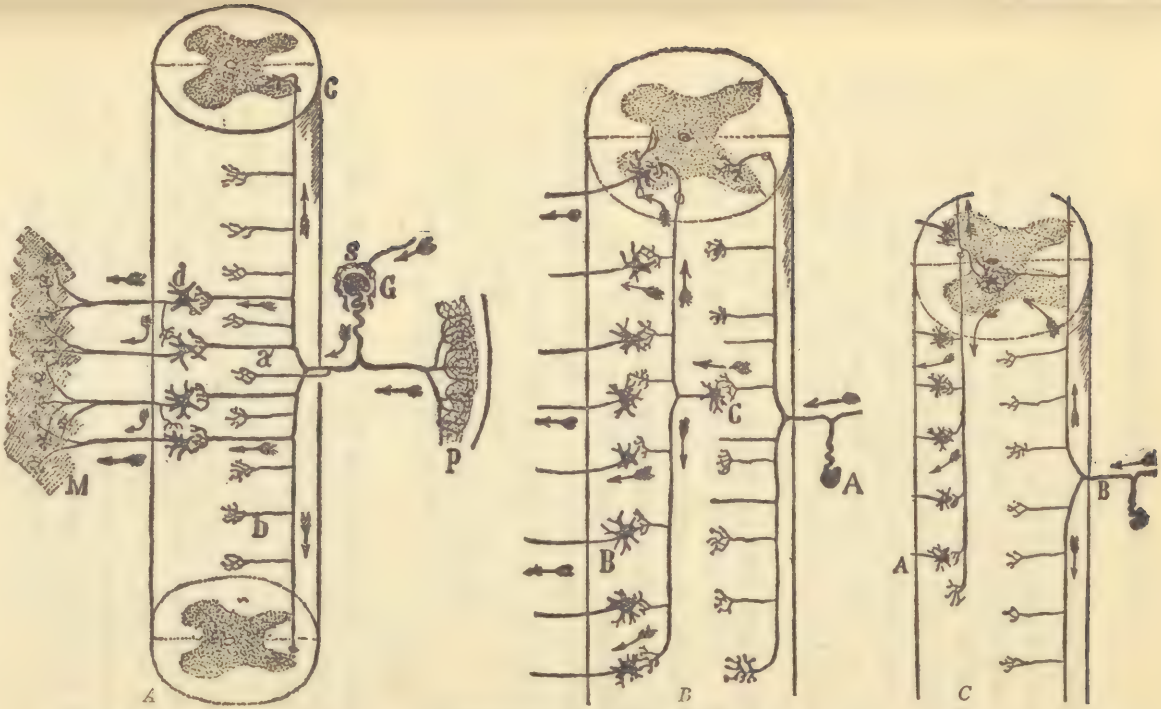


Fig. 4.—Nerve Fibre and Cell. Efferent and Afferent Nerves.



Connections in Spinal Cord.

Fig. 5.—The connections in the cord by which impulses spread to different levels. *A* shows the connections by which impulses spread immediately from the sensory to motor neurones on the same side; *B* shows the connections made through an intermediate or commissural cell (*C*) to motor neurones of the same side. *C* shows paths by intermediate cell to opposite side. (From Cajal.)

Examples of Instinct.—Some species of wasps, (the solitary wasp, and the mason wasp) show marvellous examples of instinct, when they sting a beetle or caterpillar in the spinal ganglia, which they will paralyze; will then deposit their eggs on the bodies and drag their prey, still living but helpless, to the nest, so that when the young wasp-larvæ are hatched they will have fresh meat at hand to feed upon.

The migratory instincts of birds still puzzle scientists. Birds will fly thousands of miles, over trackless ocean, yet return without chart or compass to the point from which they started.

Sometimes instincts will persist long after their usefulness has passed. A squirrel will diligently endeavor to bury nuts in the floor of its cage. A dog will bark on the trail of a fleeing rabbit, because its wild-dog ancestors hunted in packs and summoned one another by barking when the prey was sighted.

Again, the house dog who has slept all his life in a kennel, will turn round and round before settling for his nap, because his wild ancestors used so to turn, to make a nest in the tall grasses of the jungle.

Passing from the lower animals to the human race, we find babies equipped with a number of instincts ready to use, some of them disappearing directly, others developed by use. It is said that a new born baby will sometimes clutch with its hands strongly enough to hold its own weight, when lifted. One of

the first instinctive acts is that of sucking, and this will persist at the end of life, when all other instincts have disappeared. A patient apparently unconscious will often suck a rag moistened with milk or water if it is placed between his lips, after knowledge of drinking and swallowing has passed.

Darwin tells us that the sneer of today is the snarl of yesterday, when the carnivorous beast bared his fangs to his enemies. Man too, draws back the corners of his mouth, bellows when he is angry, cries out for help when he is hurt.

Primitive Instincts. — The newer psychology classes all primitive instincts under two heads, (a) those tending to self-preservation, (b) those tending to race preservation. All others grow out of these.

Emotion.—Emotion is the feeling which accompanies the instincts. It is termed by MacDougall "The conscious side of the instinct"; for example, the instinct of flight is accompanied by the emotion of fear. Or, as James puts it: "Emotion is the tendency to feel, instinct is the tendency to act".

There has been some controversy among psychologists as to whether emotion precedes instinct, or vice versa, but the findings of recent biologists, notably Cannon and Pawlow, show conclusively that some mental stimulus causes motor activity.

Fear and Flight.—I. Thus, from the emotion of fear, arise the instincts of flight and concealment. The instinct to hide from enemies follows flight, with animals and also with little children, while many a

grown person wishes to hide during a thunder storm, or bury the head under the bed clothes when terrified.

The sudden sense of helplessness, weakening of the pulse, holding of the breath, and temporary motor paralysis which sometimes occur from fear (particularly in dreams, when we are "rooted to the ground" through terror) are vestiges of the instinct of concealment, which causes animals to stop absolutely motionless, hoping to escape detection. As we have already noted, the usual effect of fear is to increase motor power to aid in escaping by flight.

Disgust and Repulsion.—II. The emotion of disgust gives rise to the instinct of repulsion. This has been useful in saving the individual from being poisoned, through rejection of what is disagreeable.

Wonder and Curiosity.—III. The emotion of wonder gives rise to the instinct of curiosity, one of the chief sources in human civilization of education, science and progress.

Anger and Pugnacity.—IV. The emotion of anger generates the fighting instinct, pugnacity, which enables the individual to protect itself and others from aggression.

Humility and Self-Abasement. Elation and Self-Assertion.—V.-VI. The emotions of humility or subjection, and of pride or elation, express themselves in turn in instincts of self-abasement and of self-assertion.

Pity and Protection.—VII. The so-called "tender emotions" of affection and pity, show in the parental instincts and those of protection for the weak

and helpless. The professions of nursing and medicine are developments of this protective instinct.

With the foregoing list of instincts and emotions, as enumerated by MacDougall*, may be included the instincts of reproduction (with its secondary sex characteristics of modesty and jealousy), acquisition, secretiveness, construction, play, imitation, sociability or the gregarious instinct, and those which tend to satisfy the demands of hunger, thirst and sleep (the so-called "vegetative instincts"). Finally there is the great instinct of religious worship which grows from the desire for contact with some higher power than humanity, and manifested under various guises, is inherent in every human being.

Value of Emotion.—We have seen that activities grow out of emotions; therefore, emotion rightly used becomes a great force for civilization. The emotion of pity for the weak has built hospitals, schools, institutions for the blind, crippled, insane and defective—and has been the instigator of measures for public health and public morals.

In order to be a successful nurse or teacher, emotions of sympathy and confidence must be established between nurse and patient, teacher and pupil. We will do far more for those whom we like than for those whom we dislike, and the nurse who wins her patient's trust at the start, has gone a long way toward easing her difficulties.

The expression of emotion tends to drain it off. Emotion should pass over into action. It is dan-

* MacDougall's "Social Psychology."

gerous if bottled up, just as a head of steam is dangerous in a boiler if not given an outlet, or used in driving the engine. People who habitually indulge in emotional sentiments without bringing forth any fruit of good works, become demoralized. If we weep over the anguish in a novel or a moving picture, and are unwilling to do our share in alleviation of real suffering, then our emotion has been wasted.

Action is our safety valve. The fear experienced by soldiers while waiting in the trenches, disappears and changes to anger and even joy, after the fighting has begun. All nurses know how much harder it is to watch pain that we are helpless to relieve, than when we are doing something for the patient. A nurse witnessing an operation for the first time, should be given a task to perform, so that she will not be sickened or fearful, as might a mere onlooker; in any emergency, we become brave as soon as there is something we can *do*. So, too, with grief, homesickness, and the energizing emotions of love, anger and moral indignation—if we can be set to work, our overcharged feelings are relieved, and we accomplish something worth while.

Every beautiful picture, every great piece of sculpture, music, or literature, every feat of engineering and scientific discovery began first as an idea, and would not have become anything more without the energizing *emotion,* transformed into *action.*

LIST OF EMOTIONS WITH THEIR INSTINCTS

Emotions	*Instincts*
Fear	Flight and Concealment
Disgust	Repulsion
Wonder	Curiosity
Anger	Pugnacity
Expansive emotion	Self-assertion
Humility	Self-abasement
Tender emotions	Parental and protective
Sex-love, Modesty, Jealousy	Reproduction
Synthetic emotion, Desire to prepare	Construction
Desire to collect and hoard	Acquisition
Spontaneous activity	Play
Admiration and suggestion	Imitation
Sociability and timidity	Gregarious or herd instinct
Reticence and inversion	Secretiveness
Upreaching and reverence	Worship

SUMMARY

Instincts are transmitted habits toward ends, involving consciousness and the higher brain centres, without either foresight or previous education. A reflex is a more simple motor act, incited by a present stimulus, without involvement of the higher brain centres. The reflex arc is nature's short cut for protection of the individual. Instincts tend to

persist after their immediate usefulness has passed. Instincts are now classified in the two classes of those tending to Self-preservation and those tending to Race-preservation. Emotion is the *feeling* which accompanies instinct. Recent experimentation proves that mental stimulus causes motor activity.

MacDougall's classification of instincts and emotions is generally accepted, while other psychologists add to the list the instincts of reproduction, acquisition, secretiveness, construction, play, imitation, gregariousness, and the vegetative instincts. Modesty and jealousy are secondary to the instinct of reproduction.

"Religion" or worship of a higher power is the final instinct, found in every race and in every individual, under various guises. It is sometimes considered as a combination of other instincts, rather than a separate one.

Emotion is a dynamic force; when rightly employed and expressed in action it can accomplish great things. Emotion that fails to pass over into action becomes demoralizing. All achievement must begin as an idea, energized by emotion, transformed into action.

CHAPTER VI

ATTENTION AND MEMORY

Attention is a part of consciousness. It is directed by emotions, instincts, interests and purpose. It is sometimes in a quiescent state, yet ready to be aroused, as when a nurse who can sleep soundly through a fire alarm in the street, will hear her patient's slightest stir or cry at night, because her interest is concerned with her patient and not with what goes on outside.

We often ignore the customary and attend to what is unusual. A monotonous sound, such as rain on the roof or wind in the pine trees, will not arouse our attention and may even be soothing, yet a slight noise of a different kind will bring us sharply on the alert. One way of arousing attention is to emphasize and make vivid, so that the thing we wish attended to, shall stand out by itself from general monotony.

Attention is of two kinds, the passive, or involuntary, and active or voluntary.

Passive attention is that which is aroused without effort on the part of the person concerned. This is the simplest form of attention. We are interested involuntarily by an idea, object or event. That

which stimulates us to attend is termed an "*incentive*".

Active or voluntary attention is that which holds the mind by conscious effort upon an idea or object, with a purpose in view.

Active attention is the higher type, where will power fixes the mind on a task, even without immediate interest or pleasure.

Concentration.—This power of forced attention is termed concentration, and is a fundamental principle of human progress. The pupil who knows how to concentrate has mastered the secret of success in work or study. It often takes some time to fix the attention and this has been described as "warming up" to one's task. We are apt to dally over beginning a piece of work, from a disinclination to get at it, but when once we settle down and make a start, it becomes easier to fasten our attention, and after a while to find pleasure in doing the work by doing it well.

Pleasure is a great incentive in arousing and holding attention. Teachers make use of this principle, which is at the foundation of kindergarten methods, and nurses may also use it to advantage in dealing with children and with difficult patients. A patient's interest may usually be aroused in the means of getting him well, and he will then take pleasure in co-operating with the nurse if he be made to feel that his recovery is the nurse's chief aim in life, for the time being!

Active attention can be held for varying lengths of

time, but it tends to blur when exercised with sound or vision. We cannot look steadily at an object without losing sight of at least part of it, nor listen to a repetition of sounds, such as the ticking of a watch, without presently missing some of them.

It is different with concentration of thought, and practice increases the ability to concentrate. Take any simple idea, and with an open watch in hand, see how long you can keep your mind *on that idea alone!* It will be found to be a very few seconds, or fraction of a second, on the first trial; but persevere, dragging back your wandering thoughts and holding them firmly to the matter in mind, and soon you will be able to report progress.

It is of greater value in the long run to learn to perform a task with a purpose in view, which will bring satisfaction in the end, than to work only as long as doing so is pleasant to us.

Observation.—Observation is an important factor in both attention and memory. A nurse who is unobservant will never be a success; but, fortunately, observation can be cultivated. There are various games where a number of objects are exposed on a table, the contestants being allowed a certain number of minutes in which to observe and then write down from memory as many articles as possible. Another way is to glance in a shop window in passing, and try to recall the articles it contained; or to look at a picture and repeat its contents. These things seem very simple, yet it will be a source of surprise to some of us to find how small an enumer-

ation we can show. Another test of observation is to expose numerals or letters of the alphabet for a few minutes, to see how many can be recalled.

A nurse should be able to enter her ward, or patient's room, and at a glance see what needs straightening or putting to rights; to detect dust on the furniture, soiled glasses, or trash on the bedside table, flowers or plants in need of water, bits of cotton on the floor, window shades of unequal height, bed clothes dragging, and most important of all, the position and appearance of the sick people in bed.

When leaving the room, let her stop a moment and look back to make sure that each patient is in a comfortable position, has proper covering, a requisite supply of drinking water, a call bell within reach, the light properly adjusted, and that no soiled or discarded article is left that should be carried from the room. This habit is worth forming.

Close observation is important where nurses are called to give evidence in court, as sometimes happens. There may be quite a marked divergence in the evidence of even trustworthy witnesses, due to faulty observation. A famous lawyer once said that he always allowed for a difference in evidence where there were several witnesses, because no two people saw exactly the same thing, and that in a case where witnesses agreed on every minute detail, he felt sure that there had been a rehearsal beforehand, and was inclined to discredit the evidence.

Memory.—Memory is something retained in the

mind that can be brought back into consciousness. It is generally considered to be due to the brain paths, and can be stimulated through association. Conscious memory is of two sorts, "rote" memory, and "logical" memory.

Recollection and recall are parts of memory; literally a re-collecting and a re-calling into conscious mind ideas which have been latent in the brain cells, how we do not know, except that the brain centers have the habit of repeating thoughts that have once passed over them. We speak of the "plasticity" of the brain cells, meaning their ability to receive and retain impressions. *Rote* or mechanical memory is due to the native plasticity of the brain cells, and is the amount of material we are capable of recalling under given conditions, without aid from association. Rote memory increases gradually from the beginning and reaches its full development after adolescence, at adult age. *Logical* memory, on the other hand, is due to the number and variety of associations. The more associations there are formed, the better and more comprehensive the memory processes. Logical memory is capable of being improved, and can go on improving until old age brings senility. It is the type of memory that is depended upon for all practical purposes of life, so it is by far the more important of the two. A person with a very short span of mechanical memory, may yet get along comfortably, provided his associations are varied and numerous, and his power of concentrated attention is well developed. Associations act

as stimuli to the brain cells, so that the same brain paths are traversed.

A retentive memory, therefore, is one in which the brain cells have the habit of thinking the same thoughts, in the same association, so readily and so often that the pathways are kept fresh.

To be consciously remembered, an event must first be impressed on the attention and then associated with other ideas or events. It is important to make right associations, and in recalling, to put facts together in an orderly way, so that we may reconstruct the memory clearly. Otherwise, we have a "disordered memory" as after illness or great excitement.

Accuracy.—Accuracy, which means a well-ordered memory and *care* in *doing or repeating*, is of the utmost value in the work of nursing.

It is easy for people to remember what interests them. Indeed, it is a law that people do not really forget what vitally affects them.

What we are interested in, we think about. The more we think about a thing, turning it over in our minds and getting new views of it, the more associations we form in connection with it; and the more associations we form, the greater likelihood there is of the brain paths getting stimulated to reproduce it for us, as a "memory".

The salesman can quote prices in what seems a phenomenal way, not only on the articles he sells, but on other lines, because he is interested in the cost of things. The baseball or football "fans"

can quote game scores and player's records, and even poor mathematicians can keep track of their incomes.

Organic or Unconscious Memory.—Organic memory is the term used when the cells and tissues of the body retain past impressions without conscious thought. The processes of cell life, building and breaking down, are types of organic memory, so that hunger and thirst are a part of it, and so are the processes of healing of wounds and of growth and repair.

When the cells have been accustomed to any drug or special stimulation, they retain that memory also, and learn to depend upon the special stimulation. This makes the habit of drug-taking very hard to break, as in the case of opium-addicts where the hunger of the cells for the drug is added to the mental craving. The only hope of breaking such habits is by making strong new brain paths which will inhibit the old ones, and will finally re-educate the body cells.

Visual, Auditory and Motor Recall.—The meaning *of visual, auditory and motor* memory, is that we recall an event in terms of sight, or sound, or of motion. All three are mixed in most persons, but usually sight or sound will predominate. Of these, sight is the most common. Most of us are, therefore, either "sight-minded" or "ear-minded". Three men describe a shipwreck; one will tell of what he witnessed on the ship's deck, the lowering of the boats, the pitiful sight of the helpless people

struggling in the water. Another will describe the sounds he heard, hiss of escaping steam, pounding of the surf on the rocks, cries of the drowning. The third class will speak of the vibrations of the ship, the muscular sensations he himself felt, the movements of others. Of these, one remembers chiefly by sight, one by sound, one by muscular sense.

The blind learn to remember from the tactile sense or sense of touch. People who have recovered their eyesight after having been blind for a long time, cannot form an estimate of an object until they have felt it. People unaccustomed to reading, will form the words in their throats, or whisper them; these are slow readers. We should read by the eye alone, not eye and larynx.

In learning a lesson, do you remember the *sight* of the words or the printed page, or does the *sound* of them come to your mind? Some people can remember best what they hear from another, while some have to look at the book for themselves, in order to get the clearest understanding. With most people, the recall is mixed. Verbal (spoken) recall, or recall with "writing down", is usually an aid to visual and auditory memory.

Race Memory.—Instinct has been called "race memory".

Memory undoubtedly plays an important part in race-preservation, as well as in self-preservation, by enabling the group and the individual to avoid what formerly has been found harmful, and to choose what has been proved beneficial. The new teaching

in psychology is that much of what we have been used to call instinct, is due to a chain of reflexes started by association, and to unconscious imitation and suggestion.

Forgetting.—There are laws also governing forgetting. It has been found that we tend to forget rapidly at first, and afterward more slowly; that is, on first learning a lesson we can "clean" forget it, while after learning it again, we forget it far less easily next time, and so on, until it remains in our minds. This principle is of value in judging the capability of pupil nurses. When taught to do a piece of work, will they have to be shown more than once or twice? Do they make the same mistake a second or even a third time? Educators among nurses usually feel that after repeating the same mistake, the pupil forms the habit of inaccuracy which may be fatal in its results, such as giving the wrong dose of medicine; while if she can profit by her mistake, she will have learned a valuable lesson, and will be safe from that same error in future. The head of a railroad system has said that he made a policy of never discharging an employee for his first mistake, because that man was made more cautious forever after.

It will be noted that most forgetting is due to lack of previous attention and observation.

Emotions also influence memory. We wish to forget things about which we have an unpleasant emotion. The more intense the emotion, the greater the impression it makes upon our minds.

There are some elaborate systems advertised to improve memory, based chiefly upon association. These artificial systems are apt to be so complicated that they defeat their purpose.

Kinds of Association.—Association is of three kinds: 1. Things that are alike (similarity), 2. things that are directly unlike (contrast), and 3. things next one another in position (contiguity).

Rules to Improve Memory.

1. Greater observation and attention.
2. Concentration; holding the attention on what we are doing.
3. Forming as many associations as possible with the things we wish to remember.
4. Calling up a mental image of it as vividly as possible, either by sight, sound or "feeling".
5. Repetition (law of frequency).
6. In study, going over the lesson as a whole, instead of by parts. This will take more repetition, at the time, but will give more lasting results.
7. Recitation of what has been learned.
8. Thoroughness. It is necessary to study longer than merely the first committal to memory, in order to ensure retention.
9. Allow the subject time to "set" before proceeding to something else.

SUMMARY

Attention is a part of consciousness, directed by emotion, instinct, interest, and purpose. Attention may be passive or involuntary, and active or volun-

tary. Active attention, which is held by the will, is the higher type. The result of active attention is concentration, essential to all forms of constructive work. The preliminary effort to fix one's attention on a task is termed "warming up". Pleasure is an incentive or stimulus in rousing attention. Objects and sounds tend to drop out of sensation, after attention has been continued for a brief period.

Concentration of thought is capable of being improved with practice. Observation likewise can be cultivated. Nurses may become more observant of facts concerning their patients, in regard to symptoms of illness, fatigue or discomfort, position and ease of the sick person in bed, and of details of the sick room. Where evidence has to be given in court, accuracy of observation is of the utmost value.

Conscious memory is nothing tangible, that can be weighed or located, but is the term given to the power of bringing subject matter back into consciousness. There is a distinction made between "rote" or "mechanical" memory and "logical memory". Logical memory depends chiefly upon association and can be developed and improved, while rote memory depends upon the native plasticity of the brain cells. Logical memory is by far the more important and is the one depended upon for all practical purposes. Associations are stimuli to the brain cells so that the same brain paths are traversed. We say, therefore, that memory has to do with brain paths.

Accuracy means concentration of attention in do-

ing or repeating. Interest affects accuracy: therefore it is easy to be painstaking and accurate for that thing in which we are interested. The greater the interest, the more we think about the matter in hand, and the greater the number of associations that are formed in regard to it.

Organic or unconscious memory is a term used to express the fact that the body cells have the power of retaining *in themselves* past impressions, causing them to break down and build up, to depend upon substances which have entered into their structure, and upon all the processes of cell life tending to growth and repair. Visual, auditory and motor recall constitute the *manner* of bringing back into consciousness what has gone before. In most persons these three forms are mixed, with sound and sight predominating. The method of recall may be tested by experiment, as to whether the sight, the sound or the muscular sense give the clearest results in memory. Instinct has been called "race memory" because it has aided in race-preservation.

Laws of forgetting show a decrease in the rate at which subject matter slips out of consciousness. Psychologists now teach that nothing is really forgotten, but that it drops into the subconscious: also that nothing of vital interest to the individual is forgotten, even from the conscious mind.

Nurses who form the habit of forgetting, and repeat inaccuracies and errors, are not safe people to care for the sick. On the other hand one mistake due to forgetfulness may serve as a valuable lesson and

ensure the nurse against repetition of that same error. Forgetting is usually due to lack of observation and attention; but there is also a tendency to try to forget things that have caused us unpleasant emotion. Artificial memory systems are apt to defeat their own purpose by over-elaboration.

The three kinds of association are, similarity, contrast, and contiguity.

CHAPTER VII

REASON AND WILL

Thus far, we have seen how impressions from the outside world have been received, how thought and emotion have led to the development of habits and instincts, and how memory has recorded past experiences. These processes alone have influenced behaviour. They have all had to do with the safety of the individual and the race.

Now we shall see what happens when instincts, habits and emotions fail to meet the needs of a situation. Then the undeveloped mind must pause to consider the matter, to find out its meaning, to bring to bear past experience, and to form a plan. Thus *reason* is brought forth to find a way out of the difficulty. As long as things go along smoothly, according to habit, we never reason. Under emotion, the mind may be confused; under reason, the mind becomes clear.

Definition.—*Reason,* therefore, may be defined as an arrangement of experiences organized so as to shape future conduct.

It consists of four parts:

1. Incentive to reason, coming from a difficulty.
2. Analysis, seeking to understand the meaning.
3. Inference, forming a trial concept or plan.

4. Proof, testing the result and finding it conclusive.

Reason depends largely upon association, in recalling past experiences. Association is reproductive, while reason is productive.

Association.—We found that associative thought worked in three ways, by *similarity,* by *contrast,* and by *contiguity.*

Of these, *association* by *similarity* gives the best reasoning power. Ideas spring up readily in some people, from similarity of facts; other minds have their ideas suggested almost solely by contiguity, that is by facts related only by nearness or sound. For example, people in delirium or some types of insanity and feeblemindedness, will associate words that rhyme, or associate one idea with another through any suggestion except that of similar meaning.

Those in whom ideas come most freely are termed "original", or geniuses. The sole point in common between genius and insanity is this freedom of ideas, while the *difference* lies in the fact that the insane do not fit their ideas to their environment, and genius achieves results. *Adaptation to environment is always the test of sanity.*

Judgment.—Analysis of ideas is the same as judgment, and is a part of reason. It means referring a new impression to an old experience, or set of values. We say a person has good judgment in business; that is, he weighs the new affair with his past experiences of a like nature. The same thing is true in

judgment of criminals; the judge considers the offense in relation to an accepted standard of conduct. It should be borne in mind that to *judge* is neither to approve nor to condemn, but merely to fix the status of the individual in the light of past experience. It is unsafe business, therefore, to take upon ourselves the judgment of others' conduct, without full knowledge of all that leads up to it, and this includes so many instincts, habits, emotions and circumstances, which we cannot know, that it is wiser to let our neighbors alone! We are too apt to judge from our own prejudices, which will react upon us in turn. "Judge not—for with what measure ye mete, it shall be measured to you again", voices a profound psychological truth.

There are two methods of reasoning, termed *Deductive* and *Inductive.*

Deductive reasoning is where we take a general law as a starting point, and consider facts in relation to that law; because so and so agrees, or disagrees, with our basic rule, we reason that it must be true or untrue. This is termed in general, *logical* reasoning.

Inductive reasoning assembles facts, and builds up a rule from them; because such and such things have happened, we reach a conclusion by inference as to what the governing law must be. Under this head comes *intuitive* reasoning. This type of reasoning gives more play to the imagination. It is the royal high-way to science. Without intuitive reason-

ing and imagination, scientific discoveries would never have been made.

Each form of reasoning helps the other, as inductive reasoning leads to fresh discoveries, and deductive reasoning enables us to verify and make use of our knowledge. Both are necessary for progress.

Imagination.—Imagination means literally "image-forming". A genius possesses a lively imagination, and we have seen that it is one of the component parts of all scientific discoveries. (Suppose, for example, that Columbus had been without imagination as to the shape of the earth, and what lay beyond the far horizon?) But, like all great forces, imagination needs *control* in order to make it useful. We all know how much harm may be caused by an imagination that is allowed to run riot.

Delusions, Illusions, Hallucinations.—A *delusion* is a false imagination; a belief not based on fact. It has to do with *ideas*, and not with *sensations*. Delusions of grandeur, of great wealth, of persecution, of being some noted character, are all wrong *ideas*.

Illusions are false sense perceptions; they are due to some mistake made through the channels of sight, hearing, touch, etc., but always with some actual foundation in fact. We see a signpost, and mistake it for a man by the roadside; we hear cats on the roof, and think it is the wailing of a child in distress. Anesthetic patients, or those suffering from delirium tremens, are subject to illusions. Illusions fre-

quently happen to normal people; they are due to mistaken identity.

Hallucinations are also sensory disturbances, but unlike illusions, they have no foundation in fact. Those suffering from hallucinations fancy they hear voices, or see ghosts, or smell various odors, where there is no external physical cause to stimulate such sensations.

Reason and Instinct.—*Reason*, then, is the common-sense view, worked out by the individual from his own experience, with thought for the future; while we saw that *instinct* was the experience of the race handed down. Instincts are often modified by reason, but tend to persist after they are no longer needed, as we saw by the dog who turns round and round before lying down to sleep. The tramping instinct that attacks some people in the spring is said to be a remnant of the migratory animal instinct which sent our uncivilized ancestors roaming, and which may persist so strongly that it interferes with lawful work. The "hobo" is a type of this outworn instinct.

Both *reason* and *instinct* build on what has gone before; but *reason* goes farther, and justifies its conclusions.

Will.—Human will is the highest point reached in the development of mankind.

The will to choose, the will to go forward or backward, guided by reason, carries the human being beyond the animal, and makes man the supreme manifestation of the creative spirit.

Some form of will has been present in every state of life, even the lowest, as a *desire*. The will to live, to eat, to reproduce, is found from the simplest types to the highest. Taken in this broad sense, Will is another name for the life force within us, driving us on.

When we speak of "free will" we mean this same force deepened and broadened in us by *intelligence*, so that it still is our directing force, with power to choose what will be either good or harmful for us.

Weak or perverted wills fail to use this power of choice wisely. A weak-willed person may know the good and foresee the results of his wrong actions, yet will still follow the paths of least resistance which habit has worn in his brain, because the *will to do right* has not been strongly enough developed. These people who understand what is right, yet seem powerless to put it into effect, are usually the ones who suffer most keenly. Such feeble wills can be re-educated. While intelligence lasts, it is never too late to cultivate new brain paths.

Poor control of the will is analogous to the condition termed "irritable weakness" in medicine. The sufferer from some bad habit can withstand temptation as long as his mental and bodily powers are working without tax; let some strain come along, which lowers his vitality, and the flood of desire rises within him and overflows the banks of self-control without check. In such cases we must build stronger banks of principle and self-control; and we must also *furnish outlets for the restless desires,*

just as we would drain off the flood waters from a swollen stream by making new and safer channels.

There is enormous motor power in controlled passions and emotions, if they are directed up higher into the mind, and there turned into constructive purposes. This is what is meant when we say the emotions are *sublimated.*

Impulse means literally "pushing on", and impulse, uncontrolled by a reasoning will, is like a horse without a rider; or, to use a more modern simile, like an automobile with the accelerator down and the brake off. Reason bridles the horse and guides the automobile. Impulsive decisions, impulsive acts, are not necessarily wrong, but if they outrun judgment, then the will power back of them has not been rightly applied. When impulses become wholly impossible to resist, the individual has become abnormal.

Decisions and acts that are in accord with our will or natural inclination, are more easy of accomplishment than those performed *against* our will. They meet with less resistance. In illustration of this, the body moves more briskly for tasks that we enjoy. A frequent sight in any Nurses' Home is that of students who come off duty from the wards tired out, yet will dance together with nimble feet when, on reaching the home, they hear gay music and find dancing going on. A horse will trot more briskly when he is going toward his stable than in the opposite direction; a boy will get ready with greater alacrity to go to the "movies" than to the dentist's.

All these things agree with the desires of the individual. Likewise, the man who is convinced that he is in the right of a quarrel can fight with more zeal than he who has a bad conscience. "Thrice is he armed that has his quarrel just".

The *will to get well,* has pulled some patients through desperate illness, where others have succumbed. We must always stimulate the wish for recovery, and confidence that it can be accomplished. The patient who does not *will* health is handicapped at the start.

The people who do the worth while things in this world are those whose wills are strong and persevering enough to overcome difficulties.

An act of will that we can all accomplish is to *hold the attention* to a given purpose,—it will follow that conditions, including bodily functions, will tend to fit in with that purpose, because strength attracts others to itself, and by and by we shall reap (accomplish) if we faint not, that is, if we *will* to keep on.

A swimming teacher, watching his pupils struggling in the tank to keep their heads above water, gave the following advice: "*Keep on,* after you think you are going down. Then you can swim!" This proved to be correct and was sound psychology. The effort of will involved in keeping on, may just bridge over the narrow space between failure and success.

SUMMARY

Reason is developed when instincts, habits, and emotion fail to meet the needs of a situation. Then

the mind must pause and consider, must recognize the obstacle by finding out its meaning, must bring to bear past experience, and finally must form a plan. Reason therefore may be defined as an arrangement of experiences organized so as to shape future conduct. Reason has been divided into four parts—1. Incentive. 2. Analysis. 3. Inference. 4. Proof. Reason, which is productive, depends largely on past experiences through association

Association by similarity gives the highest form of reasoning power. Reasoning by contiguity is often found in delirium, or in pathological states. Where association gives rise to the freest flow of ideas, we use the term "original" or "genius". This freedom of ideas is sometimes shared by the insane, so that "genius" is confused with "insanity"; but the difference between the two is that the insane fail to fit their ideas to their environment. The test of sanity is adaptation to environment.

Judgment, which is analysis of ideas, is part of reason, and means applying a new impression to old experience. The two classic methods of reasoning are deductive and inductive Deductive or logical reasoning is that drawn from a basic fact, or premise. Inductive reasoning first observes and assembles facts, and then forms a conclusion from them. Each form helps the other and both are necessary to progress. Imagination or image-forming is an aid to achievement, but needs proper control to make it useful.

Delusion is a false imagination. Illusion is a false

perception, based on a sensation, having some foundation in fact, but misinterpreted. Hallucination is based on sensation without foundation in fact. The distinction between reason and instinct is that reason has a purpose, with thought for the future, while instinct follows paths in the nervous system made habitual by past experience of the race.

"Will" is, in its more restricted sense, the highest development of consciousness. Will guided by reason gives mankind the power of choice. In its broader sense, "will" is wish or desire. Weak wills can be strengthened, and persons of perverted wills can be re-educated. The will-to-do-right, and the will-to-get-well are important for nurses to cultivate in their patients.

Emotion is dynamic, and when rightly directed is a constructive force. Impulse and emotion should be under control of the will. Impulses that it is impossible for the individual to resist, make him abnormal and anti-social. Acts which are in accordance with our natural inclination, or will, are more easily performed, than those which meet with our resistance. Will can hold the attention to a given purpose. By willing to keep on in spite of difficulties, we can often turn threatened failure to success.

CHAPTER VIII

PSYCHOLOGY OF CHILDHOOD

The child's mental development begins at birth, when it first comes in contact with the outside world through sensory experience.

At birth it suddenly exchanges the warmth and darkness of its pre-natal existence for a very different environment of light, sound, and a much colder atmosphere, the temperature of the delivery room being at least 20 or 25 degrees F. lower than the intra-uterine temperature. The babe experiences its first need, that of air, through a reflex which causes it to gasp; it loses its perfect balance of contentment, and normally lifts up its voice and weeps; so that we say that a baby's desires, i.e., the sense of discomfort, begin with its first breath, and continue in one form or another, until its final one!

The first use for psychology with a baby is to see that directly after being born it should be protected from the cold, from bright lights, and sharp noises. Its skin is wet, making it doubly liable to chill. It is often said that a baby is blind and deaf for several days following birth; that is untrue except in the sense that it cannot know what it sees or hears. A bright light passed before the eyes will make the new-born baby blink, and it will start at any sudden noise, such as the banging of a door, thus showing

that the delicate nervous system has responded to stimulation. Even a new-born infant knows when it is touched or handled, and can be "spoiled", as nurses say, within two or three hours after its birth, by being patted or rocked, showing that it soon learns to associate its sensations with movements which affect it.

Philogenetic and Autogenetic. — We have two words expressing development, philogenetic and autogenetic. *Philogenetic* means race development, while *autogenetic* means development of the individual. The race also has its infancy and childhood. It has been said that every individual shows the same phases as those through which the race has passed, of savagery, barbarity, and semi-civilization. In some people these phases are quickly outgrown, while others linger in them.

The two main divisions of the child's development are **Childhood** and **Adolescence.** These are sub-divided as follows:

Infancy .....birth to two years
Ascent of childhood .....two to seven years
Plateau of childhood.seven to eleven or twelve years
Pre-pubescence.....twelve to fourteen years
Pubescence, the physical fact of maturing, is included under adolescence.
Adolescence .....fourteen to eighteen years

Infancy lasts through the second year. During infancy and the *ascent of childhood* the mind is more plastic and the rate of development more rapid than in any other period of life.

At about seven or eight years, the child reaches the *plateau,* during which time development progresses more slowly. The child now is finding himself from within; he is going to school, forming friendships, and depending less absolutely upon parents and home. Professor Keating says: "On the plateau, the child has little interest in grown-up life. Adults are to him as part of the scenery. He is perfecting himself in self-preservation and self-expression".

Height and weight increase up to puberty, with the greatest increase during the first year, another increase in rate from five to seven, and a slight retardation on the "plateau", from eight until ten or eleven. During this period, the child learns slowly, is apt to have poor grades at school, and to show little, if any, progress. In the stage of *pre-pubescence* girls increase in both height and weight. This stage generally comes earlier with girls than with boys, so that the girl is from one to two years in advance of the boy in physical development during this period. At *adolescence,* the boys catch up, and continue to go ahead of girls in weight, height, and lung capacity.

Pre-pubescence precedes adolescence, beginning at about twelve years, and varying in duration according to whether the boy or girl matures early or late. It is the period of beginning physical changes and the dawning of sex-consciousness. The little girl begins to give up her tom-boy ways, and the boy to dream of future manhood.

Adolescence marks the end of childhood, with the establishment of sex function and its accompanying mental and physical changes. It is a beautiful and important period, to which we will refer again.

The most important thing in the development of the child is that good habits should be established early. This applies to all the physical functions of digestion, elimination, sleep and exercise, as well as to the mental ones. Intelligent control during the first few years will start the little one in the right direction, for as we have seen, habit is a thing of brain paths, nerves and muscles, and cannot be learned or unlearned all at once.

Teach a child obedience to the demands of home life; train it through its emotions; fill its mind from the very beginning with high ideals; help it to practice self-control, and you have equipped it for whatever the future may hold! A famous educator of boys, a Catholic divine, once said: "Give me a child until it is seven years old; after that, you may do with it what you will".

Nurses are often in a position to note and correct bad habits in children, which may have escaped the care of parents or teachers. There is often a physical cause for injurious habits. Picking of the nose, grinding of teeth, wriggling about on the chair, usually come from worms, or indigestion. A dose of castor oil, followed by an enema of salt and water, will relieve "pin worms". Itching and consequent scratching are often due to uncleanliness or constipation.

A child should not be scolded for bad sex-habits, which show a need that has not been otherwise fulfilled. Scolding will only breed concealment and fear. Children who have formed such habits should be talked to kindly and sensibly, be assured of help and affection, and encouraged to come and admit any lapses that may occur. They should be encouraged to persevere, rather than blamed for yielding to temptation. Above all, their errors should not be dwelt upon or told to others. A child's self-respect is a very delicate thing, and should be preserved *at all costs.* To these measures, add plenty of hard work and outdoor play; keep the food simple and the bowels open; see that the child is not too warmly covered in bed and that he gets up immediately on awakening. Have him come directly home from school, and keep a supervising eye on his playmates. If treated wisely, no bad habit will take permanent hold of a child's mind.

Sick Children.—Sick children require special psychology on the part of the nurse, which is only another way of saying that she must be tactful in managing them and in understanding their needs.

Illness is not the time to teach discipline; yet even a sick child can be taught self-control and that the nurse's word must be obeyed. Try to give as few orders as possible, and to avoid coming into conflict with the youthful patient. It is wise first to try all other means of coaxing, diverting the child's attention, even promising rewards of stories or of some special dainty; then if little Johnnie or Jean should

still refuse obedience, the nurse should use means of restraint while the order for medicine, or whatever it may be, is carried out.

The simplest method is to roll the little one in a blanket or large bath towel, so as to pinion the arms; the legs may be held firmly between the knees of the nurse; the nose grasped by the nurse's hand, and when the child opens its mouth (as it must do) the medicine may be placed in a spoon and poured well back, so that it will be swallowed automatically. If spit out, it should be instantly repeated. If a few drops have "gone the wrong way" and the child coughs, lower the head and let the fluid run out.

One such tussle will generally be sufficient to ensure future obedience. *Then the nurse must be immediately her usual kind and cheerful self again.* Sulkiness is as much to be condemned in a nurse or teacher, as in a patient or a pupil. Wipe the wrong-doing off the slate, and begin afresh.

Do not deceive a child. His confidence in you, once shaken, will never be quite regained, and you will have lost the most precious part of your influence. It is better to have a small scene in the first place and keep faith with him, than for the sake of peace to "fool" him or to promise what cannot be performed.

Play.—The play instinct is a tendency to get rid of surplus energy and probably also to adapt the individual for its work in life. This is especially true of animals, and makes them quick, skilful and wary.

A child plays because he feels sportive and well. One of the first signs of disturbed health is that a child loses interest in play. Play should be a part of every child's life, and nothing is sadder than the lot of those child-workers who have been deprived of this heritage.

The child learns unconsciously through the give and take of play, to respect the rights of others, to take turn about for privileges, to practice good team work in games, and that the universe does not revolve about himself alone. An only child has to learn these lessons from its playmates, but members of a large family educate one another along such lines. It has been truly said that every baby is born a "kicking little egoist" and becomes socialized only through its contact with others.

The fact is sometimes overlooked that older children, and even grown-people, need play, to keep them efficient; we are too apt to expect the adolescent boy and girl to assume duties in all their spare moments, and to be impatient with their desires which seem to us frivolous. The sensible course is to recognize this natural play instinct, and to give it adequate physical outlet.

Pupil nurses need their recreation time as carefully regulated as their class and duty periods. Basket-ball, tennis, dancing, swimming, an occasional automobile ride, party, theatre, or concert, (not to mention the ubiquitous "movies") will send nurses back on duty refreshed for work and more welcome to the sick people under their care. The

psychology of too much "talking shop", is due to the lack of broadening interests outside our work.

The Normal Child. — The school nurse notes whether a child is normal or exceptional. If normal, are the child's conditions favorable both at school and at home? Are his personal conditions what they should be as to habits, nourishment, health?

If below normal, how may these conditions be remedied, and the child placed in the best environment for his protection and development?

Certain tests have been devised, taken from a large number of normal children at various ages, by which the mental age of a child may be determined, and his intelligence measured.

One of the most frequently used of these tests is the series prepared by Drs. Binet and Simon, which is appended. The child is taken by himself into a room where he will feel at ease, and where his attention will not be distracted, and is then given certain questions, or tasks of which the results, with the time they take, are noted by the examiner.

Exceptional.—*Exceptional children* may be of two classes, either precociously intelligent or mentally defective.

Those below normal mentally are classed as "backward children" if they are not more than three years behind their normal grade in school.

Below this limit, they are termed "feeble-minded" or "mental defectives". In some classifications, feeble-mindedness includes also backward children, as "high-grade morons".

Classification of the feeble-minded is as follows: "Morons" are persons whose mentality equals that of children at twelve years of age. The moron can be trained to be self-supporting.

"Imbeciles" have the mental age of a child of seven.

"Idiots" have the mental age of a child up to two years. They are often unable to sit or walk alone, are unable to feed themselves, or to talk intelligibly.

The term "moral imbecile" is sometimes applied to those persons who show irrepressible criminal tendencies. The high-grade moron is often of this type, and such persons are sometimes sharp and even clever in certain directions.

It is often hard to draw the line between high-grade morons and normal persons. Many are in school, where they repeatedly fail to make a higher grade; in business, where they never get beyond subordinate positions; and in society, where they are judged unjustly for lapses and failures for which their lack of mentality is chiefly to blame. Appearance cannot be relied upon, as morons are often of pleasing personality. The intelligence quotient, commonly called the "I. Q." is the only reliable guide. The I. Q. means the quotient obtained by dividing the mental age, by the age in years. Thus if a child after having an intelligence test, proves to have a mental age of six, while his age in years is ten, his "I. Q." will be sixty, or six tenths of 100 per cent.

Careful education and environment can keep

morons, that greatly-to-be-pitied class of people, from going wrong, and can often make them into quite useful citizens. Prisons and houses of prostitution show the sad results among those who are not so guided.

Work.—It is just as important that children should be given systematic duties and be taught to work, as it is that they should be given opportunity to play. School meets this needed routine, while a few home duties outside of school help the child to realize the co-operative plan of home life where each one takes a share of the burdens and enjoys the benefits.

Truancy.—Truancy from school, is considered a form of juvenile delinquency. It may come from a number of causes, and a school nurse (who may be also truant officer) can usually find the psychological reason which makes the child a persistent truant. There is a misfit somewhere, either in the home, the school, or the child's desire for other forms of activity.

Juvenile Courts and the New Psychology.—Juvenile courts apply to the problems of child-delinquency the newer psychology which is based on the principle that the young child is neither moral nor immoral, but *unmoral,* and that conscience is developed in him as he advances in age and understanding. These courts have supplanted the old custom of arraigning and imprisoning little children along with adult criminals, and even hanging them for murder.

Among the juvenile offenses which psychology

can reach, are pilfering, incorrigibility (general lawlessness), gambling, fighting, and the "gang" spirit, which leads to attacks on persons and property. These may all be traced back to natural instincts and the love of adventure. The child is by nature a hero-worshipper, and his admiration for heroic deeds should be satisfied in other ways than through law-breaking and wilfulness. The Boy Scout movement has saved many lads from idle mischief; organizations of similar aims called Girl Scouts, and Camp-fire Girls, are striving to give girls more knowledge of out-of-door life. Little Mothers' Clubs, whose object is to teach girls hygiene and simple procedures in home nursing, are being instituted by school nurses in the public schools.

School Nurses.—School nurses have been an important factor in improving the health and morale of children, and their influence reaches not the children only but their parents, through home visits and instruction.

Adolescence.—Adolescence is a transition period. While *physiologically* it marks the beginning of manhood and womanhood, *psychologically* it finds the boy and girl still children who are somewhat bewildered by physical and mental changes going on within them which they feel, but do not fully understand.

Adolescence is a time of great glandular activity. Not only the glands incident to sex, but every other gland in the body is given a new impetus. This is shown by the sebaceous glands of the skin whose

over-production of sebum results in pimples and the roughened complexion typical of the adolescent period. The endocrine (ductless) glands are likewise functioning, and as we have learned through the discoveries of Dr. Cannon and others, these glands when stimulated by emotion, pour forth secretions which in turn modify the blood and nervous system.

The adolescent boy and girl should have great sympathy and understanding. They are very sensitive to criticism; girls weep without quite knowing why; and both girls and boys have their emotional natures greatly quickened, so that they are especially open to either good or harmful influences. Adolescent girls of weak will or defective mentality are liable to be led into immoral living.

Ardent friendships are formed at this period; the religious instinct is deepened; dreams of self-sacrifice, heroism, love and ambition (somewhat vague in character) tend to fill their imaginations. They are frequently restless and dissatisfied with home surroundings, and crave pleasure and excitement, prompted by the new energies stirring within them.

We have seen the necessity of providing safe outlets, so that the wealth of emotional force shall ennoble and not wreck these young lives.

Give them good books, wholesome surroundings, plenty of fresh air, and plenty of sleep; give them exercise and work enough to be healthily tired at night; do not ridicule or suppress their ideas, but provide them with something of interest to do or construct; sewing, cooking, carpentering, designing,

mechanical devices, sloyd, gardening, wireless telegraphy, story writing, even keeping pigeons or pet animals, all afford channels for creative energy.

Youth is the golden age of *creating and of loving*, and these, we may note, are attributes which we share with our Creator.

SUMMARY

A child's desires begin at birth. Nurses should see that the new born baby is protected from cold, from bright lights and sudden noises. Every individual passes through the same phases through which the race has passed in its infancy. The periods of childhood and adolescene are subdivided as Infancy, Ascent of Childhood, Plateau, Pre-pubescence, Pubescence and Adolescence.

The early establishment of good habits both physical and mental, is of the utmost importance, as we have seen that habit formation is a thing of the nervous system and lasts through life. There is usually a physical cause back of injurious habits, and the nurse should seek for and remove causes, rather than scold or punish. Sex-errors should be frankly explained to the child who may have fallen into them, but should not be magnified, or repeated to others. The child's self-respect above all should be preserved. Measures of hygiene should be carefully followed.

The management of sick children is an important part of the psychology of nursing. Try to teach children self-control, while avoiding conflict as far as

possible. Physical restraint should be practiced only as a last resort: if absolutely necessary, wrap the child in a blanket and carry out the order. Do not deceive children. Play is a necessary activity of childhood. The uses of play are to get rid of surplus energy, to adapt the child or young animal to its future work in life, and to socialize the child in respect to rights of others, team-work, and loss of egotism. Adolescents and adults also need recreation. Nurses in particular should have their hours of recreation as carefully arranged as those for study, ward-duty, or rest. Too much "talking shop" is psychologically injurious when off duty.

Normal and sub-normal children should have favorable conditions for growth and development. Tests have been devised for measuring the intelligence, so that children who are exceptional as being above or below the average, may have their mental ages determined. The tests ordinarily used are the Binet-Simon, a revised version of which is appended. "Backward" means not more than three years behind the average grade, at school. "Feeble minded" or "mental defectives" are more than three years retarded. "Morons" are persons whose mentality equals that of children twelve years old. "Imbeciles" have the mental age of a child of seven. "Idiots", mental age of child up to two years old. "Moral imbecile", one who shows irrepressible criminal tendencies. It is often hard to discriminate between morons and normal persons. The I. Q. (Intelligence Quotient) is the only reliable guide.

Intelligence Quotient means, mental age, divided by age in years, the quotient being given on a per cent basis.

Work is important for children; the routine of school should be supplemented by a few home duties by which the child may learn co-operation. Truancy is a form of delinquency showing an underlying cause, for which the school nurse or truant officer should seek. Juvenile Courts are an outcome of the new teaching of psychology in regard to children. Misdemeanors of childhood can generally be traced to natural tendencies, and to love of adventure. Organized movements such as Boy Scouts, Girl Scouts, Campfire Girls and Little Mothers' Leagues, direct the energies of boys and girls from mischief to habits of constructive activity. School nurses play an important part in improving the health and well-being of the child. Their usefulness extends to the home as well. Home visiting places the school nurse in the position of adviser to the entire family.

Adolescence is the period of transition from childhood to manhood and womanhood. Physiological changes occur with increase of glandular activity that modifies the content of the blood stream, and has a marked effect on the nervous system, while in turn the nervous system controls the glandular secretion, so that we have a condition of interaction and interdependence. Adolescence needs extra sympathy from nurses, parents and teachers. Proper outlets should be given for quickened emotions, restlessness, and creative energy.

CHAPTER IX

THE SUBCONSCIOUS MIND

There is nothing mysterious or supernatural about the *subconscious mind,* of which we hear so much now-a-days.

Its existence is based on the fact that nothing is ever really lost or forgotten in mental life. Thoughts not in every day use tend to drop out of consciousness to a lower level, termed *subconscious* or *subliminal* mind, or more recently simply the *Unconscious.*

Older psychologists used the term "mind" only in the sense of "consciousness", implying ideas, instincts, memory, reason and will.

We have seen that the conscious mind takes account merely of what is within its range and engaging its attention at the moment, just as a person standing on the sea-shore sees but a small part of the ocean in the waves that advance and recede at his particular spot; yet we know that these waves are part of a vast whole whose extent is far beyond sight.

So it is with the *subconscious,* holding within its depths thoughts and impressions which may always remain forgotten or may come to the surface of consciousness as memories.

Just as the waves on the surface of the ocean are

swayed by its depths, so the conscious mind is swayed largely by the thoughts and impressions deep down in the subconscious, of which we are unaware.

We tend to become unaware of those things to which we are accustomed, so that we call many acts, habits and thoughts "automatic".

Psychology has found that the thoughts and impressions of which we are unaware, outnumber those in consciousness, and this makes a factor to be taken into account with all personal problems, so that the *subconscious* is now engaging the attention of the medical, nursing and legal professions, as well as that of educators everywhere.

The *subconscious mind* has been likened again to a vast storehouse holding every impression which has been made on the mind since earliest infancy. It has been found that this stored knowledge can be tapped through various channels such as suggestion, psychotherapy, hypnotism and kindred methods.

Under certain favorable conditions, the subconscious wells up of itself and thrusts through into consciousness, as if it were an underground spring, bubbling to the surface. We call this *intuition,* when the logical associations are not perceived.

It will be seen, then, that there is throughout, the idea of something which has been submerged coming up to the surface where it can be recognized. The point where it passes out into recognition is sometimes spoken of as the "threshold". With people whose intuitions are very quick and keen, we say

their threshold for the unconscious is low. There are some seemingly miraculous people whose thresholds are so low, i.e., the subconscious rises so easily to the doors of their consciousness, that they apparently have the power of mind reading, seeing or telling the time in the dark, and performing other phenomena which make ordinary persons think them uncanny.

Ignorant people have been known to recite in an unknown language; (these cases have afterward been traced to having heard others recite this language in forgotten memories). Many cases are on record of wonderful mathematicians who have no knowledge of how they perform their feats. Musical composers, poets, and sometimes inventors have the "divine impulse" without conscious effort. A frequent example of subconscious action is when young people can "play by ear" a piece of music heard for the first time. All these show that the subconscious comes near the surface and is guiding the conscious mind.

We believe that inspiration and the "still small voice" of conscience come through the subconscious. That is why solitude and calm are necessary for spiritual growth, when the conscious mind is not distracted by interests of the outside world. All through the bible will be found references to this need of the soul for quiet communion with the spirit of God and the strength which comes from it.

One of the hardest phases of nursing for the new student is that the rushing hospital life often fails to

allow time for her to collect her thoughts. Edith Cavell wrote that the six weeks in prison before her execution were a relief, because they were the first opportunity she had had during her busy years for rest and meditation.

Our American life is keyed at too high a tension, and the increase of nervous derangements in the United States is giving us warning to practice greater serenity.

Dreams.—During normal sleep the conscious mind is lulled, and the subconscious thrusts through in the form of *dreams*. Dreams, then, are indicators of what is contained in the subconscious mind, though often in fantastic form, so that they appear to be merely a jumble of unrelated ideas.

The "Psychic Censor" and the Psycho-analysts.—A new school of psychologists, termed "psycho-analysts", which is coming more and more into prominence, claims that disturbing elements in the subconscious mind can be detected through dreams, which serve as clues to be followed down to the painful thoughts. Dreams are distorted, because a part of the conscious mind stands guard even in sleep, and will not let irritating ideas through into consciousness, so that dreams appear as symbols, and the watchful part of the mind that tries to suppress them, is termed the "psychic censor". Whether or not this be true, we know that when our minds are at peace, and our consciences and digestions clear, our rest will not be disturbed by troubled

dreams; so that the subconscious should be made, and kept, clean.

As Dr. Putnam, of Harvard, points out, "Persons have to learn that they are responsible not only for the visible, but also for the hidden portions of themselves; and that hard as the task may be (of regulating the subconscious) they should learn it".

We know that the only way we can regulate the subconscious is by control of the *conscious*, so that the brain paths which are to become habits, shall be for the higher type of thoughts rather than the lower. The subconscious retains what we have put there ourselves at one time or another.

Hysteria.—Again the subconscious comes above the threshold in ways which apparently are not under control, such as trance, somnambulism (sleep walking) "talking in sleep", dual personalities, and other manifestations, loosely classed under the term "hysteria".

Care must be used by the nurse not to diagnose these conditions, which require the greatest medical skill. Many serious results have come from wrongfully applying that word "hysterical", which nurses are too apt to use with scorn in cases they know nothing about.

What we do know is that true hysteria is always associated with some lack of self-control. The emotions have run away with the will power. The time to stop hysterical attacks, as with a run-away horse, is before they begin! Once started, the best nurs-

ing care for the patient is quiet, warmth, plenty of fresh air, and sometimes food, or something hot to drink. Recovery is quickest when the patient is left alone. Sympathizing friends should be turned out of the room. Hysterical persons should be treated with firmness, but not unkindly. For the time being, they are more or less irresponsible. When they shall have become quiet and returned to their ordinary selves is the time for the physician or nurse to find out the root of their trouble, so that it may be removed, if possible, and the weakened will re-educated. "Hysteria" is itself a symptom covering some fault or flaw in the mental life of the sufferer.

Psychotherapy.—Psychotherapy means treatment through the "psyche" or mind of the patient. As we have seen that all bodily action arises from some form of mental stimulation working through brain and nervous system, we must realize how dependent body is upon mind. The problem is, how to reach these deep mental centres or "springs of action".

Attempts to do this through the subconscious, are made by Suggestion and Psycho-analysis, as well as by the more rarely used methods of hypnotism and hypnoidization. Patients needing such treatment should be under the care of skilled physicians. Only harm can result from unwise meddling with methods poorly understood.

Suggestion means an impression that is made upon the mind, either by the person himself or through the agency of someone else. We are all more or less "self-suggested", during our waking

hours. Nurses can influence their patients by cheerful and encouraging suggestions, or can fill them with discouragement and alarm by suggesting all the dreadful things that might happen. That is why one of the most important qualities of a nurse should be a tranquil, hopeful spirit. It is of itself a tonic to a sick person.

Every successful doctor practices suggestion with his patients, consciously or unconsciously. Patients frequently exclaim: "Oh doctor, it makes me feel better just to have you come to see me!" We all know that confidence on the part of doctor and nurse is a great factor in the patient's recovery. In like manner, the patient's own attitude of hope and courage may turn the balance in his favor, so that everything should be done to rouse this energy of purpose in him.

On the other hand, suggestions for ill health are potent also for harm. Patent medicine advertisements of aching back, "pain in the kidneys" and other doleful symptoms, owe much of their notoriety to Suggestion.

There is a classical story in medical records of the French prisoner, condemned to execution, to whom the suggestion was given that his veins would be opened and that he would be bled to death. He was then blindfolded, his wrist pricked, (though so lightly as not to draw the blood), and a stream of water at blood heat was allowed to run over his arm and to drip into a basin. The suggestion of bleeding to death was so strong that the unfortunate man

died with every symptom of syncope from hemorrhage, *though not one drop of his blood was actually shed.* Whatever we may think of the ethics of such an experiment, it is proof of the point that mind can control body through suggestion.

It happens all too frequently in hospitals that nurses may be heard saying to one another: "The orders are so-and-so, but this patient is going to die! The doctor said so. He hasn't a chance". That is not the best way to win any fight, particularly the greatest fight of all, in which we stake every method known to medical science, and every particle of skill, energy and wisdom, against death. Such gloomy forebodings will hamper what is being done for the patient. Moreover, they are sometimes mistaken, as many a nurse can testify who has seen her desperately ill patient come back from the very gates of death. If your suggestions cannot be constructive rather than destructive it is better to hold your peace.

Psycho-analysis.—This method is based upon the theory that painful thoughts which have been formed in the subconscious mind, act as mental irritants, just as splinters hidden beneath the surface will cause inflammation of the surrounding tissues. Just as we must extract the splinter, so must this painful thought be brought into recognition, in order to effect a cure.

Complex.—It is known that a fright or mental shock received in early childhood and apparently forgotten, can form such an irritant. It is always the

thoughts or events which are painful, that the conscious mind tends to suppress. When these sink into the subconscious, they form a nucleus or gathering point for other thoughts of like character, which become associated with them to form what is termed a "Complex". These disturbing complexes remain in the subconscious, but will often manifest themselves in various ways which appear in consciousness.

We have already spoken of dreams as indicators from the subconscious of desires or of mental unrest; other manifestations of subconscious complexes are nervous fears (termed "phobias"), "nervous prostration", irritability of temper, moods, despondency, impulsive ideas, "bad" habits, personal mannerisms, eccentric traits, tendency to faint or to have hysterical attacks, changes in circulation such as flushing or chilliness, increased or diminished secretions, either lack of sensation or hyperesthesia, and vague pains referred to any part of the body.

It will be noted that these symptoms are often physical as well as mental. They arise from a psychic or mental cause. When the hidden complex is analyzed, and brought to light, it will be dispersed, and the symptoms will disappear. For this reason, the treatment is called "psycho-analysis".

It was found by Dr. Joseph Breuer of Vienna in 1880, while treating a patient who was diagnosed as hysterical, that in a half-waking state the patient spoke of forgotten memories, and afterward felt

better. This hint was followed up and called the "talking cure". Later it was revived by Dr. Freud and numerous others, who, without any form of hypnotism or suggestion, now endeavor to reach the patient's subconscious through his dreams, free word-association, and by encouraging him to express the first thoughts that come into his mind, without any repression. These thoughts are patiently traced back from an association on the surface, to another association behind it and perhaps forgotten, until the clue is found and the buried irritant fished up from the depths of hidden fear, into the light of understanding.

The treatment demands great patience and infinite kindness and openness of mind on the part of the physician. The name of Freud has become associated with the idea of sex, because his teaching is that most mental disturbance comes from the thwarting of primitive desires, which include not only sex in the restricted sense in which the word is often used, but all the cravings and needs arising in human beings.

The desire of life to manifest itself, (which psycho-analysts call the *libido*) flows into two channels, i.e., those of *Self-preservation* and *Race-preservation.*

Under the first head come all the instincts of protecting one's self, and getting on in the world, needs of food, rest, clothing, homes, amusement, safety, personal ambition, and looking out for "number one".

Under *Race-preservation,* come not only the reproductive instincts, but also those of kindness, family affection, social betterment, care of the weak, and thoughts of the interests of others instead of one's own. Both channels are necessary, but that of race-preservation is capable of the higher degree of development for mankind, through sublimation. The sex instinct is but one highly specialized form of the instinct for race-preservation.

Sometimes these primitive instincts continue to dominate the individual long after he should have freed himself from the lower forms and have passed on to higher levels.

Fixations.—It is unfortunate to remain on the infantile level of greediness, timidity, love of finery or of physical comfort, unrestricted imagination and emotion, even of subjection to parents or those in authority—to the detriment of our own powers of self-control and will-to-achieve.

These states of mind are termed *fixations* because the individual becomes fixed there, instead of growing in character. They are like adhesions which bind the organs down and prevent their proper functioning. Sometimes these mental adhesions become so pronounced that they force the individual into the class of abnormality, and he develops a psychoneurosis, or even possibly a form of insanity called dementia præcox, which is marked especially by these infantile fixations.

Defensive Reactions.—It has been found throughout nature, that an effort is always made to compen-

sate wherever strength or protection are lacking,—where one organ cannot perform its part through disability, other organs immediately take on the extra work.

Calloused spots on the hands, and even the common corn, are familiar examples of defensive protection by which nature seeks to provide an extra sheath or guard against friction.

This law of compensation applies to the mental life as well as to the physical body. We develop a trait which will take the place of the one in which we are deficient or that subconsciously disturbs us.

Shy people are often abrupt and brusque in manner. Timidity seeks to shelter itself behind a bold front, so that self-assertion and aggressiveness may spring in the beginning from self-distrust; while prudishness shows a defensive reaction against preoccupation with sex.

Things which hold an undue amount of our attention, are things which interest us subconsciously, even if that interest be unpleasant to the conscious mind. They have frequently been repressed in consciousness, through social necessity and convention.

Alternating Personalities.—Alternating personalities are directly due to lapses of memory. A part of the brain paths becomes switched off, or dissociated from the rest, so that the continuity is broken. There have been very interesting cases on record of people who led two or more entirely separate lives, in the same body.

We spoke of the case of the Rev. Thomas Hanna,

to illustrate the association of physical symptoms with the brain cells of thought. Among other cases is that of Ansel Bourne, who boarded a street car in Pawtucket, Rhode Island, and disappeared utterly, later to find himself keeping a little shop in another city, which he had bought while to all intents and purposes a different man, under another name.

There is a celebrated case called the "Beauchamp Case" in Boston, which developed five separate personalities, one of them a very mischievous imp called "Sally" who enjoyed playing pranks on the other selves.

A French woman-patient, also diagnosed as hysterical by her physician, developed three personalities, termed Léonie I, Léonie II, and Léonie III. It is interesting to note that Léonie III remarks of Léonie I, "She is a good and rather stupid woman, but not me"! This woman had several babies while in the state of Léonie II, which in the other states she would not recognize as her own.

While it is not intended that nurses should attempt to diagnose or treat any of these conditions, it is of prime importance that nurses, together with all other educators, should understand as far as possible the underlying causes of mental disharmony.

Anything that puts people out of touch with their environment should be investigated and corrected.

The word "educate" means literally to "lead-out-of". That is what education does, and nurses are both mental and physical educators.

It has been well said that "to understand all is to pardon all"; but stopping there is not sufficient, for after pardoning, we should lead-out-of wrong conditions and make a new start in the right direction.

SUMMARY

The *subconscious* consists of thoughts and impressions which have dropped out of consciousness to a lower level. The subconscious may be likened to a storehouse holding every impression that the mind has ever received; and this knowledge can be reached by various methods and brought up into consciousness. "Intuition" means that the subconscious brings thoughts very near the threshold of consciousness, or "limen", where thoughts thrust themselves into consciousness without their logical associations. The subconscious sometimes manifests itelf in the feats of mathematical, musical, poetic, or other prodigies. Periods of quiet communion are necessary for spiritual growth. Serenity may be attained through practice, and nervous derangement avoided.

The "psychic censor" is a part of the mind that strives to suppress irritating impressions existing in the subconscious, and guards against their effort to thrust themselves into consciousness. During sleep these ideas seek to "get by" the censor, disguised as symbols in the form of dreams. As the subconscious retains what we have put in it, it is necessary to regulate it through the brain paths of the conscious

mind, which shall form habits of the higher type of thoughts. Hysteria is a term applied to conditions evidenced by lack of self-control, or loss of association. Nurses should not attempt to diagnose hysteria as the term is frequently wrongly applied. Hysteria is a symptom of mental maladjustment, the cause of which should be sought, after the attack has passed.

Psychotherapy is treatment through the mind of the patient. "Suggestion" and "psycho-analysis" are methods which achieve results through the subconscious. "Suggestion" is an impression upon the mind of the patient, made either by himself or by some person or object outside of himself. Nurses can make helpful suggestions to their patients, and should above all avoid giving suggestions of discouragement and alarm. A hopeful, confident spirit has tonic qualities. The patient's own mental attitude influences his recovery. Advertisements of patent medicines with symptoms of disease, alarm through suggestion. Experiments prove that the mind does affect the body, through suggestion.

Psycho-analysis is the method by which painful or irritating thoughts in the subconscious are brought into consciousness. Recognition of such thoughts relieves the disturbance. A fright or shock or repression, often received in childhood, will form a nucleus in the subconscious for other disturbing thoughts which become associated with it. This is termed a "Complex". These irritants manifest in consciousness under the disguises of "nervous pros-

tration", fears, phobias of all sorts, irritability of temper, eccentricity of manner, changes of circulation and of secretion, loss sensation or hyperæsthesia, etc. Physical symptoms arise from psychic (mental) causes.

Psycho-analysis began as the "talking cure". It consists of patiently following associations on the surface back to associations in the subconscious, step by step. By free word association, by analysis of dreams, and by encouraging the patient to speak freely of the first idea that comes to mind, without repression, the psycho-analyst follows the clues which lead to the hidden complex.

Creative force is termed by psycho-analysts the "libido". It flows originally into two main streams, namely self-preservation and race preservation. Race preservation includes family affection, social desires and philanthropy, as well as the instinct for reproduction; sex is a highly specialized form of race preservation.

When the individual remains fixed on an infantile level instead of passing on through later stages of character development, it is termed a "fixation". Defensive reaction means an effort by nature to compensate against friction or some lack of the organism. In psychology defensive reactions occur in the development of the traits opposite to those in which we are deficient, or that subconsciously disturb us. Things holding an *undue amount of attention,* even if unpleasant, are things which subconsciously interest us and have been repressed. Alternating per-

sonalities are due to dissociation (i.e. breaks in the memory chain).

It is important that nurses and all other educators, should recognize mental disharmony, in order that the cause should be investigated and removed. Education means literally to lead-out-of; after leading out of the wrong conditions, a new start should be made in the right direction.

CHAPTER X

THE LIFE FORCE AND HUMAN BEHAVIOR

Behavior is now frequently taken to be the index of psychology. Modern psychologists are sometimes called "Behaviorists" to distinguish them from the old fashioned school of psychology which was purely theoretical.

We trace from acts (behavior) back to thoughts, (intelligence) and directive impulses of the nervous system. Show me how you behave, and I will tell you what thoughts are causing your action. We can thus go back until we come to the simplest unit of our bodies, a single human cell, which displays a guiding intelligence in that it takes food, grows, and reproduces itself.

What is this guiding intelligence which manifests itself through all life? We call it the Life Force, Creative Energy, "Nature", Divine Spirit.

By whatever name it may be called, we know there is a force which animates all living things, including our bodies.

Before the brain is formed, the original cells show a guiding principle in sorting themselves out from the mass of reproducing cells, and developing different functions. This may be illustrated by the three embryonic layers, the ectoderm, entoderm and

mesoderm. The cells of the ectoderm develop into epithelium, brain, spinal cord, and nervous tissue; the entoderm forms the visceral organs; the mesoderm becomes the bones, muscles and connective tissues. What makes them grow in this manner, before the brain is formed to issue orders? The life force is the only answer we can give.

Leucocytes are perhaps the most marvelous examples of cell action, through a guiding principle. They have the power of independent movement, and obeying a call which we do not yet comprehend, they go wherever they are needed in the body, and can be seen under the microscope to exhibit wonderful perseverance in pushing through blood vessel walls, drawing back and changing shape in order to squeeze through "tight" places.

As we have just noted, the brain develops after other tissues of the body have been differentiated. Brain and nerves serve as a convenient means of communication for the various parts of the body, just as a "central" is necessary for receiving and sending out messages in an efficient telephone service. The old idea that thought and intelligence were a sort of product of the brain, may be disproved by a little study of embryology.

It may be asked: "Can you have intelligence without a brain? Suppose the brain were drugged or injured?" Some degree of intelligence is shown in every unconscious act of the body, even in the cells. The brain is needed to *develop and perfect* the display of intelligence, just as a telegrapher or tele-

phone operator needs an instrument in good working condition. Intelligence manifests *through* the brain, but does not *originate* there.

The life force tends always from lower to higher forms. It is a long journey from the one-celled mass of protoplasm, such as the humble amœba, to the complex human being with the many millions of cells in his brain, as yet untested; yet we know that the life force has accomplished it, and that it never ceases to urge the race onward.

The earliest forms of living things look only to their own needs; somewhere in the scale, not very far along in development and still far below human beings, comes the thought for the welfare of others, at first probably for the nourishment and protection of the offspring. From this time on, higher qualities begin to appear. Even animals are willing to deny instinct, and sacrifice themselves for others. Dogs will give their own lives to save their master's; so the finer things of the spirit, faithfulness, love and self-sacrifice, are made manifest, until they reach heights of devotion in the human race.

It is again a far cry from the earliest vertebrate swimming in the sea or crawling along the earth, to the aviator sweeping through the clouds; yet the intelligence manifested in man has made the invention of the airship possible.

Let us pause a moment to think of the first four-footed animal who reared upon its hind legs, and found that it could go erect. What a different view of world and sky would be brought about by such a

change of posture! How many habits must have been modified!

Language.—The development of language has had an important effect on the behavior of the human race. With speech, it has been possible for individuals to draw closer together, and to better understand and learn from one another. The stranger who does not speak our language is at a disadvantage; the child early finds the need of speech; all human behavior is influenced by written or spoken language.

Heredity.—Much has been written concerning the influence of heredity upon behavior. We shall not attempt to discuss the disputed question, whether heredity or environment has the greater effect upon the individual. It is certain that physical traits and tendencies are inherited, and doubtless mental characteristics as well, though these are all subject to modification. The child inherits an infinite number of *possibilities;* which of these shall be developed and emphasized, and which will dwindle and disappear, depends upon the amount of cultivation they receive. Education and environment, therefore, as we have seen, shape the raw material. Heredity provides the organs, but birds kept in captivity will not sing their familiar song unless they first hear others of the same species sing it. Sparrows kept with canaries from the time they are hatched crudely imitate the canaries' song. Man will not talk, unless he learns from others. Children will speak the language of those among whom they are reared.

We have seen the power of habit. Teach a child

the *habit* of virtue and of mental control, and its behavior will become a thing of brain paths, nerves and muscles. Fortunately, we all inherit good traits as well as those that are less desirable, so that any inheritance short of complete feeble-mindedness is capable of improvement.

It has been claimed that civilized man inherits the animal mind, the child mind, and the savage mind, and that these are ever with him. As Professor Robinson of Columbia, aptly and amusingly puts it, "In all our reveries and speculations, even the most exacting, sophisticated and disillusioned, we have three unsympathetic companions sticking closer than a brother, and looking on with jealous impatience; a chimpanzee, a playful or peevish baby, and a savage. We may at any moment find ourselves overtaken with a warm sense of camaraderie for any or all of these ancient pals of ours, and find infinite relief in once more disporting ourselves with them, as of yore".

Human behavior has much in common with the behavior of the higher animals; we too, have physical needs and longings; we know blind fears and ignominious yielding to anger and appetite; our senses are much like those of the animals; we are swayed as they are, by impulses not clearly comprehended. Every instance of mob rule, where the group casts reason aside and acts from emotional excitement, takes us back to the animal level.

Group Psychology.—The unconscious transmission of emotion from one person to many, is termed

"group psychology". Many instances of it may be found, both among animals and human beings. Stampeding of cattle is a common example; nothing is more contagious than fear. Hysteria is another emotional outbreak, well known in the army, and in boarding schools. This group emotion may be manifested on a high plane, as patriotic fervor, or religious enthusiasm. Courage is also contagious. One brave soldier can stem a retreat, and turn flight to victory. Group psychology, or the "group mind" means that individuals think alike, and suggest to one another; there is no *separate* mind belonging to the group, or to the mob.

The laws governing communication of one mind with another in ways outside of the grosser senses, have not yet been clearly demonstrated. We cannot call them proved.

The life force, then, needs the senses not only for physical but for mental life. It works through our animal bodies, that the spirit may be made manifest.

Although necessary in this world, the senses limit as well as aid our full understanding. We cannot hear tones finer than our ears are delicate enough to perceive; we only see what our vision is keen enough to permit, though science tells us that finer vibrations do exist. All the rest lies outside of our ken.

SUMMARY

Behavior is frequently taken as the index of psychology. We go from acts back to thoughts and

directive impulses of the nervous system. The simplest unit of life, the cell, shows guiding intelligence in that it takes food, grows and reproduces its own kind.

The original cells of the embryo show a guiding principle in forming ectodermic, entodermic and mesodermic layers, from which the various tissues of the body are developed. This takes place before there is a brain. Brain and nerves are developed later to serve as a more efficient mode of communication. Thus the study of embryology alone will prove that intelligence is not a product of brain. The independent action of the leucocytes gives an example of cell action through guiding principle. The brain is needed to perfect the display of intelligence, which manifests *through* the brain, but does not *originate* there.

We know that the life force tends always from lower to higher forms, and ever urges the race toward fuller development. The earlier forms of life show interest only in their own needs: soon in the scale come evidences of care for offspring: from then on, finer traits begin to appear, culminating in the highest qualities of the human race, faithfulness, devotion, self-sacrifice.

The erect posture, and the development of language, have been important epochs in the history of the race. Heredity and environment influence the individual. The child inherits a number of *possibilities,* the development of which depends largely upon the amount of cultivation they receive. Human be-

havior has much in common with that of the lower animals.

Group psychology relates to the unconscious transmission of emotional impulses from one person to another. Instances of this are found in mob rule, stampeding of persons or of cattle through fear, and hysterical outbreaks of all sorts. Group emotion may, on the other hand, be manifested on a high plane, as religious or patriotic enthusiasm and examples of courageous behavior. There is no separate "group mind", but the minds of individuals composing the group.

The life force needs the senses for mental as well as for physical development. The senses limit as well as aid full understanding. We can only hear and see what our eyes and ears permit, though science teaches that finer vibrations exist, which lie beyond our ken.

CHAPTER XI

MENTAL HYGIENE IN PUBLIC HEALTH NURSING

The problems that arise for the public health nurse, include among others, those of learning to recognize mental disharmony and abnormality, to refer such patients to the proper authorities, and to supervise them under direction.

Sometimes advice and removal from inharmonious environment will effect a cure: sometimes the condition will be grave enough to require other treatment. In any case, the public health nurse will act under the instruction of a physician.

There are many so-called "border-line cases" which may hardly be classed as true forms of mental disease, yet are typified by some degree of mental abnormality. These include the more exaggerated forms of neuroses, psychoneuroses, phobias, hysterias, hysterical paralyses, drug addictions, and epileptiform conditions, which are amenable to treatment, and from which the patient may be restored to mental health.

Spasms due to habit, chorea, ties, stammering, migraine, and neurasthenia do not belong to the border-line cases, being usually diagnosed as functional nervous manifestations (without accompanying mental disorder), and which are generally considered to be due to the invasion of the nervous system

by toxins, or to other physical causes; while epilepsy, dementia præcox, melancholia, mania, paranoia, Huntingdon's chorea and various organic disturbances, are "over the border", in the realm of definite psychiatric disease.

With these conditions it is not within our scope to deal. A few general rules for recognition may be valuable to the nurse, who will meet such cases in the homes of her patients, as well as in the school room, the factory, and the clinic. . .

We are still in the dark as to the true cause of many of these diseases affecting the nervous system. Various theories have ascribed them to infections, to autointoxication, to fatigue poison, to shock, to repressed complexes, and to lack or excess of glandular secretion.

Of repressed complexes we have already spoken. **Intestinal stasis** and consequent absorption of poisons, is less credited than formerly as a cause of nervous disorder, though many still hold that view, and it is a matter of common knowledge that ill health and depressed spirits result quickly from constipation, so it behooves us to keep our intestinal tracts clean.

Glandular secretion, particularly of the ductless or "endocrine" glands, such as the thyroid, parathyroid, suprarenal, pituitary, and the ovarian and testicular glands distinctive of sex—(all of which contribute to the content of the blood stream)—is now being linked more and more with the diseases of the nervous system.

American and French psychiatrists in particular have made investigations with endocrine secretions, and believe that they have found the solution of much that has puzzled physicians in the way of symptoms which occur "out of a clear sky", that is, without known cause.

We have seen that the researches of Cannon and others prove that secretions are affected by the emotions. The primary cause, therefore, lies in the mind and nervous system. However, it is true that *over* secretion (hypersecretion) or *under* secretion (hyposecretion) react in their turn upon the nervous system, so that secretion and nervous stimulus are dependent one upon the other.

Strong emotion will cause the secretions to be altered in quantity and content; while derangement of the secretions causes a host of physical symptoms, which further upset the nervous system and the whole mental and physical organism of the individual. Thus, *hyperthyroidism* causes symptoms well known to the clinician; *hypothyroidism* is the acknowledged cause of cretinism and myxedema.

A number of the later physiologists go so far as to say that every cell in the body has to some extent a function of secretion. The secretory function of the *neuroglia,* heretofore considered as merely a supportive tissue of the brain, has recently been demonstrated by Nageotte.

It is certain that disturbance of the internal secretions affects the metabolism of all cells of the body. To quote Dr. Laignel Lavastine, of Paris, "Endo-

crine disorders, secondary to nervous disorders, show not only the influence of nervous disease on secretion and nutrition, but in addition, to use an old expression which illustrates the picture, the mastery of the soul over the body''. This is of importance equally to psychology and medical science.

According to this new teaching, organotherapy will write a new chapter in the treatment of nervous and mental disorders, as well as with those of digestion, circulation, and of the skin.

There seems to be increasing evidence to show that idiocy, epilepsy, certain forms of neurasthenia, dementia præcox, mania, melancholia, may be caused by excessive or diminished endocrine secretions.*

The distinction that is usually made between neurasthenia and psychasthenia, or neurosis and psychosis, is that the terms ''neurasthenia'' and ''neurosis'' imply a condition which includes physical symptoms, i. e. those affecting the body, such as pains, numbness, chilliness, headache and the like; while ''psychasthenia'' and ''psychosis'' relate to purely mental states, without reference to physical symptoms.

Reference has been made in Chapter VIII to the hygiene of the infant and young child. We may now consider briefly what may be done by school nurses to further mental hygiene.

Here as elsewhere the main thing is prophylaxis.

* Dr. Laignel-Lavastine; Dr. Leopold Levi and H. de Rothschild; Dr. F. F. Robeson; Dr. Samuel Bander; Prof. Biedl.

Everything which tends to cause mental strain should be removed or remedied. This would include defective vision, carious teeth, adenoids, infected tonsils and ears, "catarrh", anæmia, flat foot, strains of an orthopedic nature, incipient heart or kidney disease, and malnutrition.

Long walks to school, insufficient sleep as well as insufficient food, hard work done by the growing child out of school hours, or conditions in school or at home causing the child anxiety or panicy fears, are all conducive to mental strain and nervous instability.

The nervous system of the growing child needs food and plenty of sleep. Crying nerves give pains and headaches that are frequently disregarded. We know now that there *are no such things as "growing pains"!* The child who complains of them is suffering from some physical cause, which should be looked into. The child who wakens from sleep with a sharp cry in the night, may be suffering from night terrors or bad dreams, or from beginning tuberculosis of joints which during the relaxation of his first deep sleep slip and allow inflamed surfaces to rub. The advice of a physician should be sought at once.

Night terrors may be traced to errors of diet, to overexcitement, to worry over occurrences of the previous day, to fright, or shock, or troubled conscience, or to injurious habits. All of these disturb the harmony of the nervous system.

The mental disorders which accompany different

periods of growth in the individual are not primarily due to the "time of life", as is popularly supposed; it is true, however, that periods of stress, particularly where the strain is of nervous origin, are apt to lower the vitality of the individual and make it easier for him to lose mental balance.

Physical life appears to move in cycles in childhood, youth, and with adults, both men and women. The period of *adolescence* and the *menopause* have long been fraught with all sorts of vague terrors, which are unfounded in fact. It is perfectly possible to pass through both, in perfect mental health. Suggestion plays a large part in determining symptoms which appear at the climacteric. We know that these symptoms, however preventable they may be, do appear, and the public health nurse must be on the watch for them, for unless taken in time the nervous instability may become worse, and grave results may ensue in consequence.

It is now taught that spasmodic disorders of childhood *rickets* and certain forms of *malnutrition* due to lack of lime salts, may be traced to disorders of the parathyroid glands: *acromegaly,* or overgrowth of head and face, *giantism* and similar abnormalities are caused by the anterior lobe of the pituitary gland.

The nurse in the clinics for babies and children of pre-school age, as well as the school nurse, should be on the watch for symptoms of twitching, jerking, and all such convulsive movements. These so-called "habit spasms" are especially common in girls

from seven to fourteen years, though occurring also with boys. Rapid winking, grimacing, drawing of the mouth, shrugging the shoulder, or biting the arm, fingers, or finger nails are forms of habit spasm due to nervous disturbance; they occur in children who are out of sorts, or growing rapidly, and usually indicate insufficient sleep and nutrition. Nerves need to be fed and rested: sleep is as essential as food.

Chorea is a spasmodic functional disorder often met by the visiting nurse, commonly occurring in children from five to fifteen, though occasionally seen later in life. It is more frequent in females than in males. The symptoms range from the mild type, where the child "fidgets", twitches, has slight speech defect, has emotional disturbance and is generally restless, to the severe type in which the typical irregular jerking movements are so acute that it is impossible for the child to move about, or feed or dress himself. The temper is irritable and the nervous instability marked, so that nurses and parents must be prepared to exercise tact and patience, in dealing with choretic children. Often the first symptoms noticed are irritability and the tendency to drop objects.

Chorea is variously attributed to infection, rheumatism, embolism, and psychic causes. It has been so frequently associated with heart disease, that it is sometimes considered to be due to endocarditis or myocarditis.

Rest in bed is essential, and here the nurse can

be of additional value in maintaining a tranquil, happy environment for the child, free from excitement yet with enough of hopeful suggestion to keep the little patient from fretting.

In heart disease, also, the nurse is called upon to exercise her ingenuity in keeping the youngsters happily employed, while in bed. The little cardiac patient feels able to be up and at play, and the busy mother is often glad to have the youngster out of her way: in such cases, the public health nurse by daily visits of instruction may impress upon the parents the value for the child of rest and patience, so that in the end the cardiac patient may be restored to health and usefulness.

"Impulsive tic" is a disorder of childhood frequently mistaken for chorea. It is like habit spasm, in being characterized by involuntary muscular movements, but these are more general than in habit spasm. There are explosive utterances, resembling a bark or cry, and single words may be repeated (echolalia). Sometimes there is use of bad language, very shocking to parents and teachers. The child may have "fixed ideas", or impulses to touch objects, or to count, and these impelling notions must be fulfilled before the child can accomplish what is given him to do. Dr. Osler tells us that the movements of impulsive tic are of larger range and greater explosiveness than chorea, and that the disorder is purely psychic in origin, while chorea is probably due to infection of some sort.

Infantile convulsions may be due to gastric or in-

testinal disorders, to fright, or mental disturbance, without other apparent cause. Convulsions in children are apt to recur, as the nervous discharge in the brain cells tends to form habits, so that every effort should be made to remove the source of irritation, be it physical or mental.

Stammering is a spasmodic affection due also to mental causes. Suggestion plays a great part both in the causation and cure of stammering. Tell the child to "sing it" instead of trying to say it, and he will usually be able to get through without a break. Lisping and other speech defects (which if not due to tongue tie or other physical malformations) can be corrected.

Having the child recite by himself after school, while it may improve the speech defect, hurts the child's self-respect and emphasizes his social and hypersensitive tendencies.

Enuresis, or "bed wetting" is a topic upon which the advice of the public health nurse is often sought. Unless due to actual bladder infection, it is a nervous disorder and can be traced to a mental cause. After relieving all sources of physical irritation (including pin-worms and mechanical friction of the genitalia from binding or unclean clothing), find out what the child has upon his mind to frighten, mortify, or excite him. Find out what his dreams are about: win his confidence at any cost, being careful not to so much as *imply* criticism or scolding. Try to smooth away for him whatever mental difficulties he may have; see that the bladder is emptied

before he goes to sleep; abolish tea and coffee, and limit his intake of milk or water before bed time; have him awakened during the night to void only as a last resort, because it is a shock to the child's nervous system to be roused from deep sleep. Sometimes a warm enema before going to bed will relieve gas in the bowel, and lessen bladder irritability. A tepid or cool sponge at bed time will lessen reflex activity.

Sex habits and perversions, of which the child is desperately ashamed, are frequently at the root of these nervous manifestations. We have already alluded to the correction of these habits, *very much more common to childhood* than is usually supposed; suffice it to say again here, that scolding the child is not only useless but harmful; in attempting to cure him; a sensible friendly attitude, while encouraging the child to confide his lapses into such habits, should not overemphasize their iniquity. Give the youngster other outlets for his or her sex energy; praise each effort at self-control, and preserve the child's self-respect by keeping sacred everything that is told in confidence, and by giving assurance that the habit can be conquered.

Epilepsy.—The problem of epilepsy will confront the public health nurse. We are not called upon to make a diagnosis, yet must be alert to recognize symptoms which show that medical and social care is needed.

There are three general forms of true epilepsy, as well as epileptiform or "border-line" conditions,

which will be discussed later. *"Grand mal"*, the usual form of epilepsy, called by the laity "falling sickness", is characterized by a warning termed an "aura" which may take various subjective forms; following this, the patient gives a guttural cry and falls unconscious wherever he may happen to be; a tonic (rigid) convulsion lasts for a few seconds, during which the patient becomes cyanotic, and may or may not void urine or fæces; following the tonic convulsion the patient begins to jerk (clonic convulsion) with all the voluntary muscles. This may last from a few seconds to several minutes: during the tonic stage the eyes are rolled back and set, the jaws are rigid, saliva forms foam around the mouth (which may be bloody from a bitten tongue), and the patient cannot be aroused. From this stage he passes into a stupor or deep sleep, and when he awakens will not recall anything that has taken place during his attack. Sometimes he will talk or appear to be himself between the convulsion and the sleep, and it is during this period also that he must be guarded from injuring himself or other people, as he is *not* then mentally responsible, and may commit violence.

Petit mal is characterized by fleeting loss of consciousness, without convulsions, lasting from one to several seconds only, during which the face changes color, becoming fixed and pale, the eyes stare, and the patient may drop anything he happens to be holding. As the attack passes, he will go on with a sentence or action where he left off, without

realization of a lapse, and often spectators will not be aware of anything more than temporary "absence of mind". This condition is serious, in that it tends to grow worse and pass into grave mental disorder.

Jacksonian epilepsy develops from a focal point of pressure or injury. The convulsion begins in one set of voluntary muscles, and may spread until the jerking becomes general, dying away gradually, the first group of muscles involved being the last to stop twitching. This makes an important factor of diagnosis, so that the nurse can give valuable aid by herself observing, or by instructing the family to observe, the part of the body which first begins to twitch. It is possible through surgical measures to relieve the pressure.

There are besides these forms of epilepsy, certain types which approach them, termed "epileptoid" or "epileptiform" conditions, whose attacks vary in form, yet may present symptoms similar to epilepsy. These are forms which frequently bring patients into court for violent or criminal actions. The patient may *seem* to be himself during these attacks, yet will commit acts of which he is afterward entirely unaware; these epileptiform states are characterized by loss of memory.

The types of epilepsy have been described, in order that the nurse may have some knowledge of the difference between epilepsy and hysteria, which sometimes closely simulates it.

We have spoken of hysteria, and must remind our-

selves that it also is a disease which should not be neglected or treated contemptuously. Hysteria is characterized by loss of emotional control.

Hysterical convulsions may be distinguished from *epilepsy* in the following respects: epileptic attacks occur without apparent cause; hysterical attacks are induced by emotional disturbance. Epileptic convulsions are preceded by a subjective sensation (aura); the patient usually gives a cry which is unformed and guttural, due to the sudden spasm of the laryngeal muscles, and falls wherever he may happen to be, regardless of comfort or safety. Hysterical convulsions have no aura (though the patient may complain of difficulty in swallowing and the feeling of fullness in the throat); the patient may cry out, but, if so, the cry is an articulated word, as "oh" or "ah", and may continue to scream during the attack; he may fall to the floor, but in falling he will select a comparatively comfortable and safe spot, never falling into the fire or into danger as does the unconscious epileptic. During the epileptic convulsion, the patient may bite the tongue, may void urine or fæces, may require restraint to keep him in bed, while the hysteric patient does not; the epileptic patient never talks during the actual convulsion; the hysteric patient frequently talks or sobs while struggling with those about him; the body is often arched backward in hysteria (opisthotonos); finally the duration of an epileptic convulsion is rarely more than three minutes, never more than ten, during which the patient cannot be aroused; the

hysterical convulsion often lasts beyond ten minutes, and the patient may be aroused, or the attack terminated, at any time during its progress. Malingerers have been known to deceive the very elect, sometimes resorting to shaving soap in the mouth to make foam during a convulsion; yet attention to the foregoing points will show a difference in some one or more of them, and make discrimination possible.

Where there is true epilepsy, it is within the province of the public health nurse to urge education for the patient, particularly if he be a young person. Often the parents will cease to make an effort to educate an epileptic child; he should not be forced or worried, but he should be given mental interest and occupation, for often the mentality of epileptics is unimpaired, at least during youth. Psycho-analysts believe that epileptics can be reached through analysis and suggestion. It is a functional mental disorder, in that no brain lesion has been discovered in patients suffering from any form except Jacksonian.

Marriage should be forbidden between epileptics, or between epileptics and well persons, as the disorder appears to be hereditary. If the epileptic patient shows signs of mental deterioration or of unusual irritability he should be placed under restraint, as sudden violence may ensue.

Various forms of functional paralysis are met by the public health nurse. *Spastic paralysis* of infants, or so-called "birth palsy", caused in many cases by injuries at birth, is characterized by paraly-

sis with spasm of the extremities, sometimes by convulsions. While the disease dates from birth, it may not be noticed until the child tries to walk, when the legs will be found to be rigid and knock-kneed or crossed, and the child will seem to walk on its toes and the inner edge of the feet. Sometimes the arm and neck muscles will be affected, and the child will be unable to sit up without support, or will make spasmodic movements when attempting to grasp an object. The mental state is generally impaired. The child can be aided by training and education to a certain extent. In some cases complete cures may be brought about.

Paralysis agitans, or "shaking palsy", is frequently found; there is no mental impairment, and although the condition is not considered to be wholly a neurosis, it may be induced or aggravated by fright or mental shock. Here also the nurse may do much toward helping the mental condition of the patient.

Astasia and **abasia**, terms for inability to stand and inability to walk respectively, where muscular power and coördination are not lost, are functional conditions due to mental states; i. e., psychosis and neurosis, and are curable by suggestion and mental hygiene.

We sometimes find invalids who have remained bedfast for years, who are suffering from this weakness and spasm of the muscles, and can be cured by appropriate mental treatment. The condition is sometimes termed "hysterical paralysis". Fright sometimes induces it, even against the conscious ef-

forts of the patient, as when soldiers who were suffering from "shell shock" or similar psychoses, unconsciously transferred their reluctance to go under fire, to inhibit their motor mechanisms. Their legs refused to take them!

We have alluded in a previous chapter to phobias (baseless fears) and psychoses, and their manifestations under the guise of physical ailments. It is with these conditions that mental hygiene can be especially useful, both in prevention and cure. Mental habits may be changed for the better; causes of irritation in the mental make-up may be discovered and removed, or at least freed from repression.

Free word association, suggestion, psycho-analysis and good sensible heart-to-heart talks, with encouragement and helpful advice, are methods of improving these disordered mental states. Never laugh at, or make light of, the fears of a psychopath. To him they are fraught with real suffering, even though his reason may tell him that they are groundless; and ridicule on the part of nurse or doctor will cause them to be carefully hidden, but not relieved.

Remember that a good habit of thinking may always be substituted for a bad one, through the chains of reflexes and pathways in the brain.

Beginning *tabes dorsalis,* "locomotor ataxia", may be recognized by the irregularity of gait, due to loss of coördination. There is a peculiar flinging out of the legs, and stamping of the feet that is easily recognizable.

In any state of mental deterioration, such as beginning paresis or "softening of the brain", there will be increasing carelessness as to personal care and cleanliness. Food will be spilled, and clothing will be stained and spotted.

There are some spasmodic diseases of occupation, termed *occupational neuroses,* which are due partly to continuous or excessive use of the groups of muscles involved, and partly to mental causes. Examples of these are writer's, or typist's, or telegrapher's cramp. Other neuroses of this type are found among pianists, violinists, cigarette rollers, typesetters, milkers and all whose work is confined to one set of muscles, usually of the hand. Change of occupation with good measure of mental and physical hygiene, will give relief, often even without rest.

Whenever a cure can be brought about without laying the worker off from his job, it is advisable to do so, as the worry of loss of income usually more than offsets the benefit of rest. There are some conditions, such as tuberculosis or heart lesions, where this will not apply, where rest is an essential factor to recovery. The doctor must be the one to assume the responsibility of deciding the amount of work, but in every case the nurse can aid in all possible ways to keep the mind of the patient free from anxiety. This is especially a problem where the patient is the breadwinner, or the mother of a family. It is of doubtful value to instruct the patient not to worry, without devising means of re-

lieving his or her mind from the pressing necessities which may confront it. When measures of relief have been taken, they may not suit the patient's ideas, and here the nurse may be of great help in influencing the patient's mind to an attitude of hopefulness and coöperation.

It is not our purpose to deal with the subject of nursing organic mental diseases, which are usually more easily recognizable than the functional, or to outline nursing measures beyond mental hygiene. It goes without saying that *the physical needs of the patient must always be attended to.* We cannot expect to reach the mind where the body is in acute discomfort, without some accompanying attempt to put the body at ease.

Often the nurse will find persons needing attention for mental disorders, who are not her patients: here a recognition of their need will be valuable to the community as well as to the sufferers themselves, and the nurse can make it her duty to see that such persons receive medical attention.

The foregoing are the commoner forms of disturbances which the public health nurse will meet.

The menace of the **Feeble-minded** to society is just becoming apparent. Only about two per cent. of feeble-minded persons are confined in asylums, leaving the others at large in society. Of these, the morons, particularly adolescent girls, present the most serious problem.

Idiots and imbeciles are recognizable and are less apt to reproduce their kind either in legitimate mar-

riage or illegitimately, or to commit offences against the law. Idiots require custodial care, which means that they are closely watched, either by their families or in institutions.

Institutional care of high-grade morons, or else close supervision under an educational system, are ways of meeting this problem. It has been found by the Federal Bureau of Education that 41.8 per cent. of delinquent children in industrial schools and reformatories, are feeble-minded; three times that number are under jurisdiction of the courts, *not under restraint.* From 25 per cent. to 50 per cent. of delinquent women are feeble-minded.

A study of six hundred backward children shows 16 per cent. retarded from physical causes.

We believe now that mental retardation is congenital or brought about by disease in infancy or childhood. The feeble-minded are capable of being taught and educated, but their mental processes are slower, and their mental limitations are sooner reached than with normal persons.

Physical causes affect the problem of feeble-mindedness indirectly also, in that bodily resistance is lowered and inherited tendencies have less mental control on the part of the feeble-minded individual, by which to overcome those that are harmful. Thus a normal person can react against tendencies that would be cumulative in the feeble-minded; likewise, a feeble-minded person in good circumstances is less easily recognized than one who has to meet economic competition.

With school children likewise, backward ones who try to keep pace with their brighter fellows, and fail repeatedly, are apt to become discouraged and play truant. Many who used to wear dunce caps in the old days were mentally incapable.

Now we try to understand these conditions and to use more enlightened methods. It may be that there is little increase of feeble-mindedness, in proportion to population, but that it is better recognized and segregated, so that there *seem* to be more of the feeble-minded, because society now knows more about them.

The problem of the feeble-minded is preëminently a medical one. Doctors, nurses and all public health workers should undertake it with courage and energy, and above all with a *knowledge of conditions.*

Nurses are just beginning to awaken to the fact that a grave situation exists in society today, when a conservative estimate shows that *one per cent.* of the population is in the feeble-minded class.

Enough has been said to indicate the great field of usefulness for mental hygiene. It enters into every phase of nursing, but especially into the work of the public health nurse, for her contact with the *minds* of her patients is her chief avenue of approach. Without an understanding of their mental needs, she cannot hope to help them adequately.

Even with those of alien race, there is a universal language of understanding and sympathy. We have to speak one another's *mental* language in order to get at their points of view.

The greater part of the work of the school nurse, the welfare nurse, the infant welfare nurse, the industrial nurse—lies not in the school room, clinic, or factory, so much as in the homes where she goes to "follow up" her charges. Here her real educational work begins, and here her knowledge of mental hygiene, which is merely another way of expressing mental and spiritual health, will influence all those who come within her reach.

SUMMARY

It is well for the public health nurse to be able to recognize mental disharmony and abnormality, in order that such patients may have aid and supervision, under physician's instruction.

The so-called "border-line" cases include psychoneuroses, phobias, acute drug addictions, and the more exaggerated neuroses.

Habit spasm, chorea, tics, migraine, stammering and neurasthenia are functional nervous disorders, without accompanying mental disorder.

Epilepsy, dementia præcox, melancholia, mania, paranoia, Huntingdon's chorea, and organic disease are classed as psychiatric diseases.

The cause of many of the diseases affecting the nervous system, is variously attributed to infection, autointoxication, fatigue poison, shock, repressed complexes, and to hyper- or hypoglandular secretion.

Endocrine glands affect the nervous system, and

vice versa. Their interrelation is important equally to psychology and medical science.

Prophylaxis is one important duty of the school nurse in applying mental hygiene. All physical and mental sources of irritation should be removed. Disorders such as defective vision, carious teeth, etc., should be corrected. Proper hygienic measures should be emphasized. Headaches and "growing pains", and "night cries" should be investigated. Night terrors may be traced to several causes which should be removed, as the nervous system is being deranged.

Mental disorders are apt to invade a strained or devitalized organism. Adolescence and menopause are not responsible per se for nervous disorder. It is possible to pass through both in perfect mental health.

Spasmodic disorders of childhood, rickets and malnutrition due to lack of lime salts, are due to disturbance of parathyroids, and acromegaly to pituitary glands. The nurse should be on the watch for symptoms of habit spasm—chorea, impulsive tic, infantile convulsions, and stammering. With cardiac patients, rest and mental diversion may be furthered by the visiting nurse. She may also instruct parents in measures to correct bed wetting and faulty sex habits.

The nurse should have some knowledge of the forms of epilepsy, in order to recognize symptoms. Hysterical convulsions may be differentiated from epilepsy by their symptomatology.

The nurse should instruct parents as to the value of education for epileptic children, that epileptic persons should not be permitted to marry, and that epileptics should be restrained if undue irritability appears. Various forms of functional paralysis are spastic ("birth palsy"), paralysis agitans ("shaking palsy"), astasia, and abasia ("hysterical paralysis").

Phobias and psychoses have been dealt with in Chapter IX. Mental habits may be changed for the better, mental irritants removed, and the patient re-educated. Free word association, suggestion, psycho-analysis, and friendly and sympathetic advice are measures for re-education. The fears of a psychopath should never be ridiculed. Good habits of thinking may be formed through the chains of reflexes and brain pathways.

Occupational neuroses may be corrected through measures of mental hygiene, and change of work. If the patient be the breadwinner, it is better not to lay him off from his job if it can be avoided. The nurse may aid in saving him from worry, and in winning his coöperation.

The nurse must give heed to the physical needs of the patient as well as the mental. She may aid others, not her patients, and the community also, by recognizing mental or physical abnormality, and procuring medical attention.

Certain symptoms attendant upon tabes dorsalis, paresis and mental deterioration are easily recognizable.

While mental hygiene enters into every phase of nursing, it is especially necessary for the public health nurse, as her contact with the *minds* of her patients is her chief avenue of approach. We must speak one another's mental language in order to understand and be able to help.

The greater part of the work of the public health nurse is in the educational work that she does in "following-up" her patients in their homes, and here mental hygiene has its chief usefulness.

CHAPTER XII

SUMMARY OF PSYCHOLOGY OF NURSING

We started out by saying that psychology was of importance to nurses and to all those engaged in promoting health. Let us glance over what we have learned, and see how it affects self, patients, environment, society and education.

One of the first things to impress itself upon our attention is that it lies within our power to form habits of cheerfulness, courtesy, gentleness, courage and truthfulness.

Consideration for others can be cultivated as a habit of mind. That covers almost every trait a nurse should possess. If she is considerate, she will speak and move quietly instead of noisily; she will be patient, and avoid *appearance* of impatience or flurry; she will give her entire attention to the patient's welfare; she will be on hand when wanted, and learn to efface herself when necessary; she will know when to chat and when to hold her peace; she will try to understand the reasons if those about her are peevish, sad, or exacting, and by searching out the underlying causes for their ill temper, will win them back by her own good sense and good temper, to happier frames of mind.

All these are included by the one word, *TACT.*

We say that tact is born in one person and not in another; but tact can be cultivated, like any other grace. It lies in *stopping to think first of the other person,* and then in trying to understand his point of view.

Cheerfulness is one of the first essentials for a nurse to possess. A gloomy person is a constant wet blanket to health, and a discourager instead of an encourager. We have seen the effect of fear on the man who thought he was being bled to death. Many parallel instances could be given of the harmful effects of fear.

Fear acts upon the body by changing the secretions, checking digestion, and partially paralyzing certain centers of the nervous system.

The milk of a mother who nursed her baby two hours after experiencing great terror, poisoned the infant so that it died in convulsions.

Fear is the great inhibitor; it breaks down and destroys, because fear leads to panic, just as courage leads to confidence.

Fear is excited by the strange and unfamiliar; that is why death and the supernatural induce primitive terrors. Many people throughout their lives fear darkness. Nurses, on their first night duty, dread being alone. These natural fears can be overcome by becoming accustomed to the conditions which produce them. Once we know a thing fully, we cease to fear it. That is why perfect love or understanding casts out fear.

If you fear persons, such as doctors, the superin-

tendent of nurses, your patients, or those among whom you work, first try to understand their positions and points of view, and you will then begin to find your will and purpose agreeing with theirs. As soon as you coöperate with them, fear will disappear.

If lessons, duties, illness, misfortune, or disappointment are what you fear, meet them squarely, with confidence in God and in yourself. The only way to conquer a difficulty is to face it. Once recognized, it will usually turn out to be less of a bogey than you had anticipated.

Confidence wins, where doubts will weaken us and cause failure. There is a simple little ditty called "The Man Who Wins", which expresses this very well:

"If you think you are beaten, you are;
If you think you dare not, you don't;
If you like to win but you think you can't,
It's almost certain you won't.

If you think you'll lose, you're lost;
For out in the world we find
Success begins with a fellow's will;
It's all in the state of mind.

Life's battles don't always go
To the strongest or fastest man;
But soon or late the man who wins
Is the one who thinks he can."

Author Unknown.

A nurse should understand herself and her own natural instincts. Psychology will help her here, better than anything else can do. It teaches her the control of self; the importance of right thinking and

habit-forming; the dynamic power of the emotions, and how to use them for help and not for hindrance; to avoid infantile fixations and limitations; and to look away from selfish ends to broader aims for the welfare of the race. By first understanding ourselves, we learn to understand and control others.

In learning or working, psycholgy shows us that the first step is **attention,** and then the will-power to hold it on the task in hand.

Accuracy is indispensable for nurses to acquire, because the brain will retain early impressions. Past experience persists in the subconscious; it comes to our aid in future performance, so that if we have once learned correctly, we shall be skillful in nursing procedures, just as in games. That is why a nurse's early days of training and her probationary period are the most important of her whole course. Slovenly nursing habits will cling throughout her career and will be hard to shake off. In emergencies, we instinctively go back to the ways we were first taught, because those were the original impressions made on the nervous system.

We have observed the psychological effect of fear on patients, and how much can be done by a nurse who radiates hope and courage. Courage must have a genuine foundation; nothing is more irritating to patients than the false cheerfulness sometimes put on for the occasion by nurses and relatives.

Sickness is apt to make patients supersensitive; they are like people whose protecting skin has been removed, leaving all their nerve endings raw and

quivering; trifles are magnified; the whole mental viewpoint is out of focus. The wise nurse understands this, and does not judge sick people as she would those in perfect health. Yet even in illness, self-control can be practiced by the patient, and it is the nurse's part to help her patient to learn the advantages of self-control and how to regain it, if lost.

Nursing in institutions, both as pupil and graduate nurses, gives opportunity for the psychology of coöperation and good teamwork. There is always a certain amount of friction generated by various parts working together, either in a machine or an institution. This friction may be reduced to a minimum, or allowed to increase until it interferes with the entire work. Among any group of workers, loyalty to those in charge and to one another, is the first essential. This consists in obeying orders, in forbearing to carry gossip or to repeat what is said in confidence, and in placing one's personal importance secondary to the goal in view. Without loyalty an army is useless, so that one of the main principles which is taught soldiers is implicit loyalty to country, flag, and regiment. This same spirit should animate the nurse in regard to her profession, uniform and school. The school spirit is a valuable asset, when it stops short of jealousy.

The next essential is fairness and respect for the rights of others. Every position and every department in the hospital, from that of superintendent to probationer, has its problems and obligations;

and where one thoughtlessly infringes on the rights of another, trouble is bound to result.

The nurse who does not pick up after her work, leaves dirty dishes or utensils for others to clean, and forgets to put her things away, is a trial to everyone about her.

The nurse who borrows without returning, who "loots" from the diet kitchen because she has the chance, or who hoards away linen or supplies belonging to all, fails in the first principles of good teamwork.

Nurses who go on duty in a strange hospital, or who return as graduates to their own hospital, are placed in a new position toward their fellow-workers.

The question was asked a number of graduates from various schools: "What are your obligations on entering a strange hospital as a graduate nurse, to (a) the superintendent of nurses? (b) The pupil nurses? (c) The hospital management?" Answers were unanimous in regard to the necessity of courteous treatment of the pupils, some of them being: "Do not put on airs", "Do not act as if you knew it all just because you're a graduate", "You should treat the pupils politely and not expect them to wait on you". These replies testified eloquently to the fact that pupil nurses have suffered from non-observance of these rules in the past. The replies to what was due to the superintendent of nurses and to the hospital management, were less unanimous in character and showed doubt.

Forbearance is a golden virtue in institutional

life. The psychology of the soft answer that turneth away wrath, is nowhere better exemplified than in hospital, where a number of people are working together at high tension of responsibility.

When we analyze "touchiness" and oversensitive feelings, we find that they usually come from self-love and an exaggerated sense of our own importance which has been injured. The ability to overlook trifles and to cast off the chip from our shoulders is of immense value.

Private duty brings a new set of problems. Here loyalty to the physician is of even greater importance than it was in hospital, because the nurse is more in touch with relatives and friends. A nurse often has the opportunity to make or mar the reputation of a physician or of a fellow nurse.

The tendency to exchange confidences, to repeat the affairs of her own life as well as those of others, and to indulge in personal gossip, is much stronger in the intimacy of a home, where nurse and patient are drawn into close relations, and time sometimes hangs heavy on the hands of both. With the patient's recovery, he or she swings back to the normal interests of life, and is then apt to take a different view of the nurse's revelations.

The psychology of relaxed self-control during illness, explains why a nurse must guard as sacred all confidences which are made to her by her patient, together with what she may learn of family matters during her stay in the household.

Her relations with members of the family and

with the servants are of only less importance than those with her patient. On first going into an unfamiliar household, a nurse should remove her wraps and don her uniform before seeing her patient, as evidence of her position of responsibility. Her first entrance and greeting to the sick person should be made with kindness and dignity; the psychological effect of immediately establishing trust and liking on the part of her patient, will be of mutual benefit; and this can be gained only through the patient's assurance that the nurse is more concerned with her patient's care than with her own appearance or comfort.

Some people have the uneasy feeling that they are paying a large salary to the nurse and are being defrauded if she is not doing something for them during every moment of her time on duty. This tendency can be allayed early by a tactful nurse, who lets the patient feel her full sympathy and coöperation, while quietly taking the reins of responsibility herself. It is sometimes wise to say to a restless sick person: "Let us be quiet now; I will teach you how to relax and rest for a while. That will benefit you more than anything else".

After the patient, the next consideration should be for the servants, or those upon whom the burden of housework falls. Illness is a terrible disturber of routine, and nurses can do much by their forethought to save steps and inconvenience. It is a good plan to visit the kitchen soon after taking charge of a sick room, in order to find out household

arrangements, the most convenient time for the patient's meals, where things are kept, and to make friends with the "help".

An attitude of courtesy to servants and of understanding of their problems, will be repaid by their coöperation and respect, instead of by a sense of grievance against trained nurses, which ignorant people often assume.

The **public health nurse** has daily need for knowledge of the psychology of environment as well as of people. Her method of approach has much to do with her success. How does she impress people? Will they trust her, believe in her kindness and integrity, respect her judgment in dealing with their problems? Without the power to inspire such confidence, the public health nurse will never achieve anything beyond the most meager results. Her ability to do social work will be curtailed, for the psychology of the social worker demands a knowledge of human nature above everything. The best foundation for any form of social work is that of the sound training of the graduate nurse.

We have noted the effects of environment on the development of the child, and in counteracting the hereditary tendencies of the individual. The future of society rests with its children. Educate them properly and the race will develop beyond our dearest hopes.

In this education the nurse has a great part to play. She can reach all members of the community as no one else can do, outside of the clergyman and

the physician. Her mother instinct can take her where even priest and physician cannot always go; and no service can be greater than that which she is prepared to render.

Nursing is biologically sound, as a profession for women, giving as it does outlet to the maternal instincts, in care of the weak and helpless. For that reason women who choose nursing can always be sure of growth in their professional lives, as new opportunities arise on the horizon.

As long as sickness, ignorance, poverty, crime, and sorrow are with us, so long will nurses have work before them. Whether that work be along the lines of private duty, in institutions, or the public health field, while preventing illness, caring for the sick, and teaching everywhere by precept and example, nurses have a direct responsibility for the betterment of the community and the race.

Let us never be content until skilled nursing is within the reach of all who need it, not only the well-to-do, but the unfortunate and ignorant.

Let us work together for the day when nurses shall be part of the equipment of every orphanage, asylum, reformatory and prison—as well as of every kindergarten, school and university in this country, until these latter shall have done away with the need for reform.

SUMMARY

This chapter is itself a summary, including the formation of habits of cheerfulness, courtesy, and like

virtues necessary for sucessful nurses. The most important of these is consideration for others, shown in various ways, and included in the word *tact.*

Fear inhibits secretion, checks digestion and partly paralyzes certain nervous centers. Understanding will often abolish fear. Confidence conquers fear. Psychology teaches understanding of self and others. Attention and accuracy are indispensable to good nursing and should be learned at once, as early impressions tend to persist in the nervous system, when associations are being formed. Self-control should be cultivated by the nurse both for herself and in her patient, even during illness.

Nursing in institutions demands qualities of loyalty and teamwork in particular. Practice forbearance; avoid "touchiness" and oversensitive feelings. Private duty requires loyalty to the physician, reticence about personal affairs, avoidance of gossip, kindly and dignified relations with members of the family and with servants, and consideration of the extra burdens entailed upon the household by illness.

Public health nursing requires a knowledge and understanding of people. The manner of approach has much to do with success. The best foundation for the social worker is a nurse's training.

The future of society rests with the children. The nurse can be a great force in education, as she can reach all members of the community. Nursing is biologically sound as a profession for women, giving an outlet for maternal instinct. For this reason,

women may always be sure of professional growth as new opportunities arise.

Nurses will be needed as long as sickness, ignorance, poverty, and crime exist. Theirs is a direct responsibility for the betterment of the race. Skilled nursing should be brought within the reach of everyone. Nurses should be made a part of the equipment of orphanages, asylums, reform schools, and prisons, as well as of every school and university.

CHAPTER XIII

PSYCHOLOGY OF OCCUPATION

Psychology would be of only general value to the public, if it were not practically applied in specific instances and to special occupations.

We have seen that it can be used by nurses in every phase of their profession. How is it of benefit to other workers? And what factors in the psychology of occupation or industry will apply also to nursing?

We have all heard of the "psychological moment"; it is what we endeavor to choose for commencing whatever work or undertaking we may have in hand. It includes the time, place and conditions most favorable to our venture; *it is the occasion that is calculated to give the greatest amount of efficiency.* Efficiency has become the watchword of industry as well as of professional work and education. Intelligence tests are coming into use for determining efficiency, and for examinations in schools and colleges.

"Efficiency bureaus" have been established, and "efficiency experts" have started practice, for the sole purpose of making investigations and giving advice.

These expert persons go carefully over the situ-

ation, study it from all angles, test the workers by psychological methods, and then advise the management on what can be done to improve faulty conditions.

The points they take into consideration are:

(a) whether the surroundings are hygienic for the worker;

(b) whether there are useless processes or unnecessary motions involved in doing the work;

(c) whether the periods of work and rest are so distributed as to minimize fatigue;

(d) to suggest methods of utilizing the spirit of cooperation or competition, as the case might be;

(e) to suggest plans for industrial representation and profit sharing;

(f) to outline means of educational and recreational benefit: and finally, (g) the recommendation of measures for the physical and mental health of the employees, such as the installation of public health nurses, and sick benefits and life insurance, all of which tend to free the mind from anxiety for the future.

Let us first examine the general factors relating to occupation.

Sex.—The controversy between men and women as to the work each is to do has perhaps always existed, but has certainly been intensified by modern civilization. In primitive times, there may have been women of energetic intellect who thought they could hunt, fish, and go to war equally as well as, if not better than, men; but tribal necessities appor-

tioned the work of the tribe and family definitely, and the home-tending, nourishing, and childrearing end of the work, fell to the women.

The word "nurse" is derived from the French word meaning "to nourish"; so that nursing is specifically a woman's job. Its meaning has been extended to the care of the weak and ill, as well as of children, and from earliest times women ministered to the needs of the wounded and suffering. It has been stated* that the labor-saving devices of modern times have robbed women of their place in the home; be that as it may, as long as there are disease and ignorance in the world, there is need for nurses in ever increasing numbers.

Women are of smaller stature than men, weigh less, and for the present average at least, show less relative strength and endurance.

The theory that women are handicapped in labor by their sex periodicity has been proved to be without foundation in fact. Experiments have been made, and records kept, which show conclusively that there is no rhythmic variation as to woman's ability, speed, or performance of work, during her periods. This is important for nurses to know, as they can do much toward correcting the prevailing dread of her period which haunts the mind of the average woman.

Age.—Chronological age, that is, age measured by time, is by no means a sure criterion; it is the physiological age that counts. "A man is as old as

*"Women and Labor"—Oliver Schreiner.

his arteries'' is a familiar saying. He is also as old as his heart, his lungs, his kidneys, and his other glands; but more than all, he is as old as his *mind.* Some people are physically and mentally younger at fifty than others at thirty-five. Education, environment, habits of living and of thinking, all come into the question of keeping young, and these are all of greater importance to the body than the fact of the passage of a given number of years.

Some industrial firms make a practice of pensioning and retiring employees when they reach a certain age, usually seventy. This is also done for teachers and the clergy. In most industries, new men are not taken on after they are forty or forty-five, according to the varying risks of the work. This is a cause of dissatisfaction among the employees, as if a middle-aged man loses his job it is difficult for him to get another in his line of work.

The claim has been made that it takes longer for a middle-aged person to learn than for a younger person; this has been refuted by psychologists. An older mind may not be trained in attention, memory, or coördination, and may thus find difficulty in taking up new lines of work; on the other hand, age has its advantage in added experience, an increased number of associations, and a knowledge of cause and effect. When we remember that association is the most efficient means of recalling to memory, we realize that if *attention can be sufficiently concentrated,* a mature mind is as capable of learning as a younger mind.

It is well to recall that as logical memory goes on increasing until a varying chronological age, we cannot set a limit to the age at which an individual can cease to learn.

Therefore, while it is a practice among schools of nursing to set age limits in the admission of pupil nurses, we often find women above the age limit who make valuable nurses because they have the faculty of *knowing how to learn.*

Environment.—Enjoyment of work depends largely on the conditions under which the work is carried on. Disturbing noises should be suppressed as far as possible. It is the unnecessary noises which prove the most distracting, as one soon becomes accustomed to a necessary repetition of sound, and even misses it if it ceases.

Efforts to overcome distraction, cause extra expenditure of energy, and in consequence fatigue comes more quickly. Therefore there should be as few interruptions as possible, where intensive work is to be done.

The immediate surroundings should be of the most healthful type, for any occupation. This means that attention should be paid to ventilation, lighting system, heating, overcrowding and measures to avoid fatigue. Agreeable quarters for work are important, as the mind is rested, even subconsciously, by looking at harmonious and beautiful things.

In visiting a country house recently, one of the finest views to be had was that from a window over the kitchen sink. The hostess explained that she

wished her maid to enjoy the mountain view, for its beauty lightened the task of dishwashing.

In ventilating, we know that air must be not only renewed, but kept in motion, as languor and depression result from stagnation and humidity rather than from direct vitiation by carbon dioxide.

Illumination should be even, with glaring light avoided. It is not generally realized how susceptible the whole nervous system is to light, nor how delicate are the brain's reactions to it. If the brain be exposed, its whole bulk can be seen to swell, when a light is approached to the eyes. We all know the effect of light on growing plants and flowers which turn toward the sunlight and close their petals when its stimulation is withdrawn. In like manner, it is claimed that change in light will affect the rhythm of respiration and pulse in a sleeping baby.

These facts should be borne in mind while nursing patients with meningitis, tetanus, or any disease where the patient may be unconscious, yet lie with eyes open or partly open.

Light should not be allowed to shine directly into the eyes either of sick or well people, as it causes nerve strain. Light directly in front causes from 25 per cent. to 30 per cent. loss of efficiency in the worker.

The indirect method of electric lighting is considered best as it gives a diffused light. If an eye shade is worn it should be lined with white, as a dark lining intensifies the glare. The green found in nature is restful to the eyes, which are highly charged with

blood, because green is the complementary color to red. Yellow or crimson or blue trees and grass would be extremely fatiguing.

Temperature and Humidity.—Any marked variations in temperature tend to interfere with activity. Either heat or cold may stimulate temporarily, but continuation of both will soon cause a decrease in activity, which, with cold, amounts to torpor. It used to be found that there was more drunkenness in winter than in summer, showing that lowered vitality felt the need for stimulation; while crimes of anger, passion and assault prevail in summer time. Therefore it may be seen that a temperate climate is the one most conducive to efficiency, and this is borne out by the fact that the leading nations of the earth live in the temperate zone.

According to measurements made by Dexter, it has been found that fewer errors of a certain type were made by a special class of workers (bank clerks) in April, May and September; more were made during October, November and December; while in the hot months there were most errors made.

Dexter concluded that an increase in temperature caused increase in errors, which ran very much over the average after the thermometer reached 90°F. A high humidity caused more errors as well as discomfort and irritability. There was more inaccuracy on rainy and cloudy days than on sunny ones.

Experiments have been made recording the highest efficiency in relation to the time of day. Dr. Hollingworth found that mental workers do best in

the morning, and that they show a decrease of 10 to 15 per cent. in efficiency during the day. Strictly, mental memory, such as that required for study, composition, attention, etc., is best in the morning, for both speed and accuracy.

Accuracy of movement increases in efficiency up to noon, then decreases in the afternoon; *while rate of movement* gains efficiency until late afternoon.

Physical strength is greatest between 3 and 5 p. m. Dr. Hollingworth finds therefore that where the work is motor in character, with speed an important factor, the afternoon output is best. He states that morning work falls 6 per cent. below the average for the day, and from 10 to 12 per cent. below the efficiency maximum, occurring late in the day.*

Fatigue and its causes have been carefully studied in relation to occupation. It has been found that shorter working hours give a better output of work, both in quantity and quality. In study, more can be accomplished by an increased number of periods, with breaks between for rest and change of attention, than by a study period continued for a greater length of time. This illustrates our old lesson of the brain paths: change gives relief.

Nurses find that during the first half hour of their class or lecture periods, it is easy to pay attention; after that interest begins to flag unless the lecturer happens to be unusually compelling in subject matter or personality.

* Applied Psychology—Hollingworth and Poffenberger.

The old fashion of having nurses' lectures held at night, after a hard day on duty, was hardly conducive to either mental efficiency or to good work in the wards next day. After a certain stage of fatigue has been reached, additional fatigue wears on the organism in an increasing ratio. There is undoubtedly a nervous element in this, as by change of work, i.e., changing the mental trend, the sense of exhaustion is forgotten.

It has been questioned by psychologists whether there may be such a thing as purely mental fatigue, which is not demonstrable in the brain cells, *per se*. (Physical fatigue is clearly demonstrable.) Work and rest should be distributed to the best advantage. Prof. Taylor who experimented with men carrying loads of iron ore, states that when a given number of men worked for only half of a day and rested the other half, they increased the amount of iron carried to forty-seven tons, as against twelve and a half tons daily, under the old system.

Monotony is a factor in both physical and mental fatigue, for the reasons just given. In industrial plants, it is found that operatives tend to become careless after long continued repetition, and that accidents are apt to happen through wandering attention. We all know how apt the mind is to wander in doing tasks to which we are thoroughly accustomed.

Occupations which call for monotonous repetition are apt to cause more cases of "nervous breakdown", "overwork", etc., than those giving greater

variety. This is one of the reasons why nursing is less taxing than it is generally supposed to be. There is constant variety, both of occupation and of people. The change of patients, the new combinations of symptoms, all tend to arouse the nurses attention and to stimulate her interest. All nurses know that when with a critically ill patient fatigue is forgotten. The game of circumventing death is the most difficult of all to play, and one where success brings the most glorious sense of triumph. These are factors which hold nurses in their profession, and attract them from the more monotonous occupations of typing, stenography, clerking, dressmaking, housekeeping, and even teaching.

Rhythm is often called upon to help in overcoming fatigue. Marching soldiers will have an access of energy when the band begins to play. Sailors have songs known as "chanteys" to whose cadences they perform the work of hauling sails and other sea duties, especially on the older sailing craft. Negroes on the Southern levees sing at their work; men in the prison workrooms are found to be more docile and more diligent if allowed to whistle.

If manual work is done too rapidly at first, it is apt to tire the worker quickly, so that his final output is lessened. Shoveling, digging, sawing, chopping, stoking coal, pounding and like activities should be begun at a pace that may be comfortably kept up during the working period. The imitative faculty is brought into play where there is a group of workers, by placing one among them who is a

little more speedy than the rest, as pacemaker, so that the co-workers will follow his rate of movement.

Posture also has to do with occupation. An industrial nurse should be on the lookout for faulty position on the part of employees while at work. Sometimes a loom or a lathe is placed too high or too low, and taxes one side of the body at the expense of the other. Spinal curvatures and restricted lungs may be overcome by the simple expedient of changing sides, while at work. The nurse should consult manager or foreman about this.

It has been found more efficient to complete all there is of one form of work, before passing on to another. For example, in ward work if all the temperatures are taken by one nurse, all the medicines given by another, and all the beds made by others, we have more efficient nursing than if one nurse did everything necessary for one patient.

Experiments with a tilting board have shown that more and better mental work may be accomplished with the feet elevated. This aids the circulation. Most men in their hours of relaxation like to sit with their feet higher than their heads. Soldiers after long marches would lie on their backs with their legs propped against the side of a barn or a wall. Many people can think more clearly lying down. It is less fatiguing to walk than to stand for any length of time, for the physiological reason that the blood collects in the large venous sinuses of the abdomen, and unless it is pumped out by muscular exercise, tends to stagnate there, causing de-

ficiency in the brain circulation and consequent lack of mental stimulus.

Important results have been found from experiments made to determine *efficiency in movement.* Many slight movements that are unnecessary count up in expenditure of energy, and lessen efficiency in the long run. From Prof. Gilbreth's study of bricklaying, we find that by going about the business in the most efficient way as to economy of motion and of distance, the number of bricks laid by each man was raised from the standard of 120 bricks per hour to 350 per hour, while the number of motions involved in laying each brick was reduced from eighteen to four.

The paths of movement traversed in our daily work should be scrutinized, and all purposeless and unnecessary motions discarded. This is of especial value to nurses, who daily take many unnecessary steps; again, to *save* unnecessary steps should be a chief aim of hospital construction.

In "efficiency engineering", moving pictures are now taken of all sorts of work, and the various processes carefully studied to detect false motions. Time can be saved by the proper arrangement of working implements, the ones to be used first being placed nearest the hand. If this sounds trite, consider how neglected we find it in every nursing procedure, when once we have trained our eyes to look for economy of movement.

The psychology of choosing an occupation consists principally in finding out the aptitudes, desires and

preparation possessed by the subject, and combining them to the best advantage. His desires do not always coincide with the other conditions involved. Then the question arises: "Shall he follow his wishes, or shall he go on with the thing he can already do best?" In answering this question, we must take into consideration the strength of the subject's will-power and his ability for concentrated attention. Provided the latter be strong enough to hold him to study, he may take up the new line he most desires, at least long enough for a trial. Generally speaking, we can learn to do best what we most *like* to do. Interest is feeling, and interest is necessary to hold the attention for any length of time. Many lives have been spoiled through forcing young people into lines of work wholly uncongenial to them and where their real abilities are never called into activity.

The ways in which psychology may be applicable to nursing were given in a foregoing chapter. Hollingworth gives a list including trades, as follows:

1—Salesmanship—suggestion.
2—Advertising—attention and interest.
3—Study—memory.
4—Management—knowledge of motives and impulses.
5—Animal training—laws of learning.
6—Politics and oratory—crowd formation and group behavior.
7—Decorative arts—esthetic reaction.

8—Literature—range and complex interrelation of purpose and emotion.
9—Industry—laws of rest and fatigue, work and inhibition, habit and distraction.
10—Social work—mental abnormality.

To these we may add:

11—Teaching—observation, knowledge of child psychology.
12—Stenography and bookkeeping — attention, memory.
13—Dressmaking and designing — observation, imagery.
14—Cooking, housekeeping and homemaking—interest and attention, knowledge of the psychology of human behavior.

The psychology of the executive applies to:

1—The selection of efficient employees.
2—Organization and management of groups of workers.
3—Providing effective environment for working.

There is always loss of time and efficiency through changing jobs. Where frequent changes occur, a certain number of the working staff have to act as trainers and teachers of newcomers, who might otherwise be doing constructive work. We see this with pupil nurses, on the wards, when they first go on duty. The employee also loses through change, even though he may gain a better position in the end.

For that reason, great care should be exercised in the first selection, both on the part of employer and employee, of superintendent of a school of nursing and applicant, and of teacher and prospective pupil.

There are various ways of selecting applicants. The old-time requirement for nurses of sending a photograph, submitting letters of recommendation, etc., has fallen into disuse. Credentials consist preferably of high school credits and records of subsequent education. In industry, we rely more and more upon mental tests for the general intelligence of the applicant, as well as an examination of his physical fitness. Sometimes tests are given for special fitness along certain lines. A number of these vocational tests were made by the late Prof. Münsterberg, as well as by Dr. Thorndike.

The U. S. Army has paid much attention to getting the right man in the right place, which proved well-nigh impossible at the beginning of the great war; but later a branch of the service pertaining to the Adjutant-General's office was established at Washington under the name of the Personnel Division, and through painstaking examination of previous employment, and by tests for general intelligence and special fitness, the Personnel Division appoints officers and men to the positions in the army where they will prove most effective. Thus we see the Government applying psychology to its affairs. Schools of nursing might use similar methods for finding those who are good executives, or who have special ability.

We have already spoken of the general intelligence tests. Those used in the army were the Binet (Stanford revision) and also the Goddard revision, the Yoakum-Yerkes (for individuals), and the Alpha and Beta group tests; the Alpha for English speaking persons and the Beta for foreigners, or illiterate persons.

In using tests for aptitude or special fitness, a group of workers is first selected whose ability is known to be average or above, and the results of testing these workers are compared with their record for work. It is found that those known to be good workers show good results also for the tests; while poor workers do the tests poorly.

A record is kept of the subsequent output of work of those who passed the tests successfully; if this record corresponds in value with the results of the tests, then those tests are proved satisfactory for future use, for the same sort of occupation.

Organization and management of workers may proceed along several lines. Taylor has formulated a system of management, in which are stressed nine factors applying equally well to hospital, school, factory, kitchen, army, office or athletic team. These elements are: (1) individuality, (2) functionalization, (3) measurement, (4) analysis and synthesis, (5) standardization, (6) records and programs, (7) teaching, (8) incentives, (9) welfare.

Under *individuality,* we see first the greater respect paid to the worker, and efforts made to increase his self-respect.

Psychology has taught that it is wiser to utilize the assertive spirit of the individual, as well as the "gang" spirit, for social rather than for anti-social ends. This is brought out in the various forms of industrial democracy, where the employees are given a voice in the management. It is applicable to the nursing group in the form of student government, which is the only principle by which self-respecting adults should be directed.

Under *functionalization*, we have the specialization of work, i.e., that form of work given the worker which he is best fitted to perform, and one type of work alone done by him.

Measurement means determination of the span of the output of work.

Analysis and synthesis mean resolving the character of work and worker back to its elements; study of the component parts, and putting them together again. This is done by psychology, and gives a knowlege of human nature and the whys and wherefores of human action.

Standardization is now very much in the foreground. Hospitals are taking up all the methods by which business concerns have been made successful. Nurses' legislation laws, State Boards of Examiners, and Leagues of Nursing Education are emphasizing the importance of uniform standards.

Records and programs are part of the results of standardization. They tabulate facts about the patient or the nurse or the employee, as the case may be. These records may be of the utmost ser-

vice to both worker and management at some future time. Programs consist of an outline of what is to be done. Thus in case of a patient, the program would consist of a diagnosis and probable form of procedure; for a nurse, the outline of her training; in industry, the program would be a plan for the worker's special job, another plan for his living conditions, his recreation and his own or his children's education.

Records may be kept by the worker of her own ability and output. This leads to constant effort on her part to better her own record. Nurses may keep their own records while in training, to some advantage.

Incentives include methods of getting people to work. They are of many kinds. A tactful and kindly teacher, in charge of any group of students, knows how to use incentives to the best advantage to promote loyalty and coöperation. Competition sometimes increases the output of work, either in the case of individuals, or where rivalry exists between groups who are united by bonds of nationality, religious beliefs, or civil condition. Thus the "gang spirit" may be utilized for teamwork. The old idea of punishment or penalizing has largely given place to encouragement.

Psychology is used for detection of crime through methods of free association and of expression of emotion through physiological reactions, which can be measured. The first method consists of giving a list of stimulus words, some of which are "critical",

that is, having reference to the crime. The subject is asked to respond as quickly as possible with the first word that comes to his mind. The length of time is noted for each response. If the subject hesitates in his reply, that hesitation is said to be an "inhibition". The list of words is then reversed, giving the subject's responses as stimulus words, and asking for original reactions to these words.

If guilty, the subject's answers or "reactions" will be characterized by the following:

1—Retarded in time of response or inhibited altogether.
2—Significant as to the "critical" words.
3—Changed reaction to stimulus words, especially those that are "critical" words, when the series is reversed.
4—Answers to all critical words too stereotyped or formal, and very slightly retarded, showing selection in the response to the stimulus word. This retardation may hold over for words directly following the "critical" words, showing preoccupation of thought.

The second method, which is used in conjunction with the foregoing, is by use of instruments such as the sphygmograph, pneumograph, and galvanometer, for recording heart beat and pulse wave, rate and depth of respirations, and changes in secretion of the glands.

It is reported, from researches made by Dr. Benussi, that the truth or falsehood of a spoken statement can be detected by the ratio of the length of inhalation before the statement, to the length of the expiration following it.

These are some of the practical applications of psychology. We must bear in mind that while we are considering its value as applied to occupations and to organization, we may not overlook its origin in the human mind, called into action by human need, and expressed by human endeavor.

It would be interesting to trace the great movements, begun because some one person saw somewhere something that needed to be done, and *then set about doing it!*

Students can find for themselves the array of great names in nursing, as well as in other professions, among the humble and poor, as well as the great. Follow the steps of science, of philanthropy, of all achievement, and see the simple beginning—just a thought, acted upon, and patiently followed up! This is within the power of each one of us. We too can recognize a need, and try to fill it as faithfully and understandingly as we know how. We too can constantly make a choice, selecting the higher, rejecting the base, by use of reason and will.

We may not all inaugurate great measures, nor create wonderful works of art; but we can each have a share in making a finer human race, and a cleaner, healthier, happier world in which to live.

SUMMARY

Psychology may be practically applied to other professions besides nursing. The "psychological moment" is that which offers the most favorable time, place and conditions for an undertaking. Efficiency is the aim of industry, professional work, and education. Intelligence tests are used for examinations. Efficiency experts make investigations and give advice as regards:

(a) surroundings for workers,
(b) unnecessary motions employed,
(c) minimum amount of fatigue involved,
(d) methods of employing coöperation or competition,
(e) plans for industrial improvement,
(f) education and recreation,
(g) measures for physical and mental health of employees.

Factors relating to occupation are: sex, age, environment, ventilation, illumination, temperature and humidity, accuracy of movement, fatigue, monotony, rhythm, posture, efficiency in movement, and efficiency engineering.

Applied psychology has to do also with the choice of an occupation, selection of applicants, vocational tests, general intelligence tests, and special fitness tests.

Organization and management are classified by Taylor under the following heads, applying equally

to hospital, school, factory, kitchen, army, and office systems:

1. Individuality.
2. Functionalization.
3. Measurement.
4. Analysis and synthesis.
5. Standardization.
6. Records.
7. Teaching.
8. Incentives.
9. Welfare.

Psychology may be used for detection of crime—through methods of free association and of the use of instruments, as the sphygmograph, pneumograph, and galvanometer.

While applying psychology to methods, we must bear in mind that the origin of all achievement is in the human mind, called into action by human need, and expressed by human action. Every great movement was started because some one person *saw a need* and tried to fill it. We can do the same, if only by making choice continually of higher over lower, and by each doing her share in making a finer race, and a cleaner, healthier world.

CHAPTER XIV

THE BINET-SIMON MEASURING SCALE FOR INTELLIGENCE *

INTRODUCTORY:

In 1904 an educational measure in Paris called for enumeration of all the mentally defective children in the public schools.

In order to segregate these children, an examination was made of school children in Paris, for which the following scale of tests was arranged by means of selecting questions which could be answered correctly by groups of average scholars for each age.

This scale of tests was originally arranged by Alfred Binet, a psychologist, and Theodore Simon, a doctor.

The classification of mental defectives was based formerly upon the ability to talk, dress and feed themselves, and to earn a livelihood. M. Binet, who was a student of language, held that language development was an indication of the intellectual level, so he graded the mental defectives according to their ability to use spoken and written language. Thus, the **idiot** falls below the plane of intelligent speech. He either does not speak at all, or imperfectly, and has a mental age not above the child of two.

* Revised by Dr. Henry H. Goddard.

The **imbecile** understands the speech of others, and talks himself with varying fluency, hence has the mental age of children from two to seven years.

Morons not only use spoken language but can learn to read and write. They have the mental age of children from seven to twelve.

In addition to these groups, we have the *mentally retarded,* above twelve years, and the so-called "moral imbecile" of any mental age, whose perverse tendencies are apparently irrepressible. As our knowledge of psychology increases, we have hopes of learning means to control and re-educate this last class of persons who may not be so unamenable as we have thought heretofore.

The **causes** for mental deficiency fall under two heads, first the imperfection of original germ plasm; and, second, conditions external to the child which affect it.

There are six factors affecting the germ plasm through either the male or female cell:

1. Neuropathic inheritance.
2. Alcoholism at time of conception.
3. Tuberculosis causing a weakened germ.
4. Syphilis causing a weakened germ.

   (Neither tuberculosis nor syphilis is directly inherited, though the fœtus may be infected *in utero.*)
5. Consanguinity.
6. Age of parents.

Conditions having a direct influence on the child from without:

1. Those before birth:
   a. Condition of mother during pregnancy.
   b. Injuries to fœtus.
2. Injuries during birth:
   a. Difficult labor.
   b. Instrumental delivery.
   c. Primogeniture.
   d. Premature birth.
3. Conditions after birth:
   a. Traumatic.
   b. Toxic.

Neuropathic inheritance includes existence of epilepsy, chorea, neurasthenia or psychoneurosis in either parent, giving a tendency to an unstable nervous equilibrium in the offspring.

Alcoholism at the time of conception lowers resistance of the germ-plasm. The same is true of *tuberculosis* and of *syphilis*. These diseases are not now believed to be transmitted directly through the fertilized ovum, but the fœtus may be infected *in utero* by the mother.

Consanguinity or marriage of near relatives is apt to emphasize certain traits at the expense of others. There is less harm in intermarriage where the dominant mental and physical traits of one counterbalance the recessive traits of the other.

Age of parents affects the mentality and physical vigor of offspring. First children, born early, are generally more vigorous, though occasionally we find children of older parents who are mentally above the average.

Prenatal physical and mental condition, including injuries, diseases, overwork, poor nutrition and nervous and mental diseases of the prospective mother, affect the fœtus.

Injuries during birth may be from lack of amniotic fluid, suffocation, pressure, maternal hæmorrhage, prolonged labor, or instrumental delivery. In taking histories of defective children, it is well to learn whether the child was delivered normally or instrumentally. A baby delivered by instrumentation is more apt to be mentally defective under equal circumstances than one born in normal labor, owing to the yielding substance of the head which can only withstand a certain amount of pressure.

Primogeniture means time of birth in respect to another; with twins or triplets the first born usually is the strongest. Pressure from a twin may cause injury during birth.

Premature birth may be the cause of lack of brain development, or of injury or inanition.

After birth, the mental condition may be affected by injury (traumatic), zymotic diseases or other poisons (toxic) and by lack of nutrition. Diseased tonsils and adenoids also interfere with proper development.

Of the tests, Dr. Goddard says:

"Experience with these tests has continually reassured us not only as to their value, but as to their amazing accuracy. Their usefulness as a means of understanding the mental development of children is beyond question, and we confidently believe that the time will speedily come when every child in school will be occasionally examined, by some such method as this, with a view of determining his actual mental development and consequently what can be expected of him. This, not only for the purpose of segregating and giving special treatment to those who are backward or feeble-minded, but that we may know those who are especially well endowed and those who have average intelligence, so that each may receive the instruction that his condition requires.

"In the use of the Binet tests, experience has emphasized two important dangers or liabilities to error. The one comes from the tendency of the optimistic, affectionate teacher to help too much, and so credit the child with more than he himself can really do. The other is the opposite tendency of the teacher, who either temperamentally or because of momentary conditions, is not encouraging, but rather discouraging to the child, so that he does not do his best, and consequently does not get up to the standard of which he is really capable. One should never begin the examination of the child with any preconceived notions as to what the child is going to do or how much he knows".

Technique of the Test:

In making the test take the child by himself in a room familiar to him, if possible, where his attention will not be distracted by anything unusual. Examiner and child should be seated at a table with nothing upon it except articles used in the present test. Questions should be asked but once, plainly, and without indicating the answer. Use care not to frighten or intimidate the child; encourage him by a friendly manner, and do not either seek to correct him, or show dissatisfaction with his answers, remembering that the intention of the test is to discover the mental level of the child, not to instruct him. If others are present, enjoin them to silence. A secretary to write down the answers of the child verbatim may be of use, provided he sits back or to one side, so as not to distract the child's attention. In case the child refuses to talk at all, through timidity, encourage him by other means before beginning the test.

The tests should be prepared in advance; materials should be at hand, the coins kept in a separate purse.

The numerical results of the test should be kept *at the time of the test,* and later a more detailed account may be written. Select a large sheet of paper, ruled in squares in which are written the names of the children in a column (grouped according to age). Results are expressed opposite the names, by the following symbols: The sign + indicates that the test is passed; the sign — indicates failure; the sign 0 indicates silence; the sign ? indi-

cates that the result is doubtful; if a doubtful result is nearer failure than success, the sign —? is used; if nearer success the sign +? is used.

The more complete record should consist of the child's full name, age, date of birth, nationality, date and place of examination, name of examiner and mental age. Notes may also be made of the physical condition of the child, his standing in school, his attitude during the examination, and the civil condition of his parents, with any additional facts of importance.

To judge accurately of a child's intelligence, it is necessary to give him more than one test. Begin with the one for his age. If he passes that successfully, go on to the next.

A child has the intelligence of that age *for which he passes all the tests.*

After determining the age for which a child has passed all the tests, one year is added to the intelligence age if he has succeeded in passing *five* additional tests belonging to more advanced ages; *two* years are added if he shall have passed *ten* such tests; *three* years if he shall have passed *fifteen* tests, and so on.

A child should not be considered mentally defective unless his retardation of intelligence amounts to more than three years.

If a child is to be examined a second time, at least six months should be allowed to elapse, and care should be used that the child should not be "coached" by his companions.

For scientific value, the tests should be made only by those who possess a thorough knowledge of psychology. The tests may be made by anyone to get an approximate idea of a child's intelligence, provided care be given to the foregoing instructions, and that the questions are carefully followed.

Tests begin with three years, and end with sixteen, which has heretofore been considered adult mental age.

Tests made in the United States Army, may lead to a modification of this age limit, data seeming to show that the adult mental age is a fraction above thirteen. As yet, however, sixteen continues to be the recognized adult age as given in the following tests.

The revision by Dr. Henry H. Goddard, of Vineland (N. J.) Training School, is the one we have used. The Stanford revision, arranged by Dr. Terman, is also an excellent one, and was used in the army.

THREE YEARS

1. Shows eyes, nose, and mouth.
   (Question "Where is your nose? Your eyes? Your mouth?")
2. Repeats six syllables.
   (As "It rains. I am hungry".)
3. Repeats two digits.
   (As 7 and 2. Pronounces figures distinctly one-half second apart, without emphasis.)

4. Points out objects in a simple picture.
   (In answer to the question "What do you see?" Each picture represents one or more people and a situation.)
5. Gives the family name.
   (As "Smith" or "Brown".)

FOUR YEARS

1. Gives own sex.
   (Question "Are you a little boy or a little girl?" Place first the opposite sex to the child.)
2. Names familiar objects.
   (As "key", "knife", "penny". Question "What is that thing?")
3. Repeats three numerals, 7, 4, 8.
4. Points out the longer of two lines differing by two-fifths of an inch.
   (Hesitation is failure.)

FIVE YEARS

1. Tells which is heavier of two weights of the same size.
   (Use cubes or boxes 3 and 12 grams; 6 and 15 grams.)
2. Copies a square.
   (Show a square drawn in ink on paper; tell child to draw what he saw, with pen and ink, not pencil.)

3. Repeats ten syllables.
   ("His name is John—he is a very good boy".)
4. Counts four pennies.
5. Reconstructs an oblong card, cut diagonally.
   (Show whole card. Cut a visiting card diagonally, and place two pieces on the table, with the two hypotenuses away from each other. Be careful that one of the pieces does not get turned over.)

SIX YEARS

1. Distinguishes between morning and afternoon.
   (Question "Is this afternoon or morning?" Use first the one which it is not. Some children always answer the latter of the two alternatives.)
2. Defines, in terms of use, five common objects.
   (As "fork", "table", "chair", "horse", "mamma".)
3. Obeys three commands, given together.
   ("Do you see this key? Put it on that chair. Then shut the door. After that bring me the box that is on the chair. Remember, first the key on the chair, then close the door, then bring the box.")
4. Shows the right hand, the left ear.
5. Tells pretty faces from ugly or deformed faces, in pictures. (Fig. 6—Binet Test.)

Fig. 6.—Binet Test Age VI. No. 5.

SEVEN YEARS

1. Counts thirteen pennies. Pennies must be placed in a row and counted with the finger. No piece must be counted twice and none omitted.
2. Describes a picture, with some detail.

3. Notes that parts are missing in incomplete figures. (Fig. 7—Binet Test.)
   (Omission of arms, eyes, nose or mouth. Ask the child "What is lacking in that picture?")

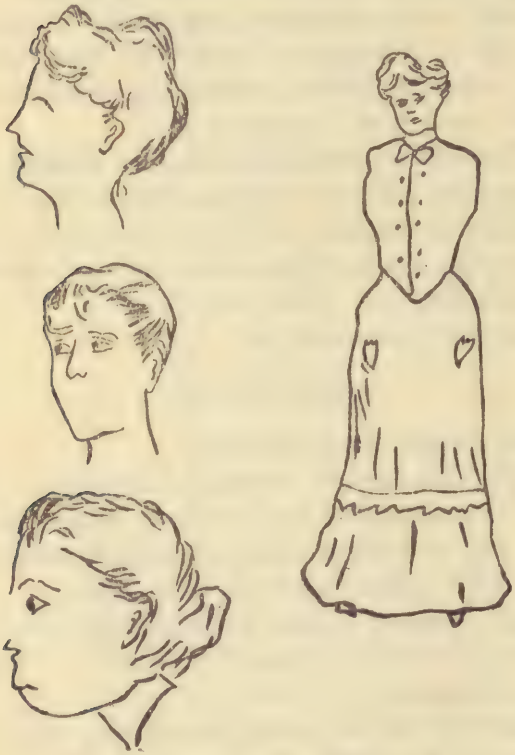


Fig. 7.—Binet Test Age VII. No. 3.

4. Copies a diamond or lozenge from one drawn on paper. Use ink.
5. Names four colors, red, blue, green, yellow. (Use color papers, touch each with the finger, and

ask "What is that color?" It should be done in six seconds.)

EIGHT YEARS

1. Compares two objects from memory.
   (As, wood and glass, paper and pasteboard, fly and butterfly. Ask "Why are they not alike?" Two satisfactory. Two minutes.)
2. Counts backward from 20 to 1.
   (Twenty seconds, one mistake allowed.)
3. Names days of the week in order.
   (Ten seconds.)
4. Counts the value of three one-cent and three two-cent stamps. (Ten seconds.)
5. Repeats five numerals, 4, 7, 3, 9, 5.

NINE YEARS

1. Makes change from 20 cents.
   (As, for article costing four cents. Have dimes, nickels and pennies. Play store, and buy an article costing four cents; child must give sixteen cents as well as say it.
2. Defines common objects in terms superior to use.
   (As, "fork", "table", "chair", "horse", "mamma".)
3. Names day of the week, the month, day of the month, and year.
   (Satisfactory if there is error of not more than three days, in month.)
4. Enumerates the months in order.
   (Fifteen seconds. One error allowed.)

5. Arranges in order of weight from lightest to heaviest, five weights similar in appearance but differing by three grammes each.
(Select little pasteboard boxes, identical in appearance, filled with sand or cotton and weighted by matches, or pennies. Three trials allowed; test passed if two out of three are correct. One minute each.

TEN YEARS

1. Recognizes all the pieces of our money (penny, nickel, dime, quarter, half-dollar, one dollar,

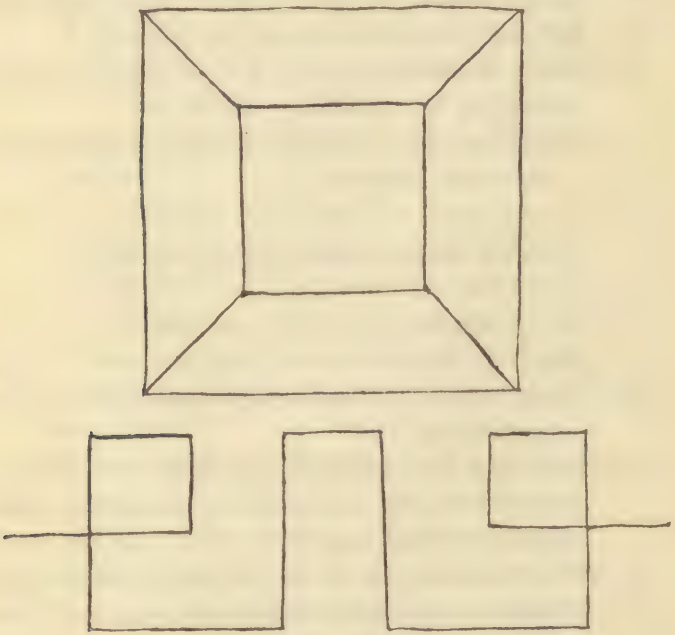


Fig. 8.—Age Ten Years. No. 2.

a two dollar bill, a five dollar bill and a ten dollar bill.)

2. Copies two simple designs from memory, after seeing them for ten seconds (may use pencil). (Fig. 8.)
3. Repeats six figures, 8 5 4 7 2 6, 2 7 4 6 8 1, 9 4 1 7 3 8.
4. Understands easy questions.

First series—time twenty seconds:

(As:

1. "What would you do if you missed the train?"
2. "What would you do if one of your playmates hit you without meaning to do so?"
3. "What would you do if you broke something belonging to somebody else?"

(Satisfactory if two of the three questions are answered correctly.)

Second series—time twenty seconds:

(As:

1. "What would you do if you were delayed in going to school?"
2. "What would you do before taking part in an important affair?"
3. "Why is a bad action done when one is angry, more excusable than the same action done when one is not angry?"
4. "What would you do if you were asked your opinion of someone whom you did not know well?"

5. "Why should one judge a person by his acts rather than by his words?"
   (This test is for the transition period, between ten and eleven years.)

5. Uses three given words in two sentences.

ELEVEN YEARS

1. Criticises absurd statements.

Say to child: "I am now going to give you some sentences in which there is nonsense. See if you can tell me where the nonsense is."

(1) "A bicycle rider fell on his head and was killed instantly; he was taken to a hospital, and they fear he will not recover."

(2) "I have three brothers, Paul, Ernest and myself."

(3) "An engineer said that the more cars he had on his train, the faster it could run."

(4) "There is a road from the village to the city up hill all the way there and back."

(5) "There was a railroad accident yesterday, but it was not a bad one; only forty-eight people were killed."

(Three satisfactory replies will pass the test.)

2. Uses three given words in a single sentence.

3. Says at least sixty words in three minutes.
   (Child is told to name as many words as he can, proper names, nouns, or other words, as table, board, beard, shirt, carriage, etc.)

4. Gives three rhymes to each of three words.
   (Use man, toy, cold. Explain what is meant by one word rhyming with another. Illustrate. One minute allowed for each.)
5. Puts dissected sentences together.
   (Choose a simple sentence of eight or ten words, which are misplaced, and tell the child to make the correct sentence.)

Examples:

(1) Hour for we early at park an started the.
(2) To asked paper my have teacher correct and I.
(3) A defends dog good his bravely master.
(1 minute each.)

TWELVE YEARS

1. Repeats seven figures 2-9-4-6-3-7-5.
   1-6-9-5-8-4-7.
   9-2-8-5-1-6-4.
   (Tell the child there will be seven figures. Give three trials. One success is sufficient.)
2. Defines abstract terms.
   (Question "What is charity? Justice? Goodness?" Two definitions satisfactory.)
3. Repeats a sentence of 22 to 26 syllables.
   (Use: "I saw in the street a pretty little dog. He had curly brown hair, short legs, and a long tail."
4. Resists suggestion as to length of lines.
   (Point to shorter, saying "This line is longer, isn't it?" Use three sets of two lines each.)

5. Solves problem from several given facts.
   (Examples: (1) "A man walking in the woods began to be worried. He looked to right and left. He walked back and forth. He climbed a tall tree. What was the matter?"
   (2) "My neighbor has just received visits from a doctor, a lawyer, and a clergyman. What is going on at my neighbor's?"
   (3) "I saw a crowd going along the street. They were all dressed up, and each had a basket or a bundle. Where were they going?" (Two satisfactory answers sufficient.)

FIFTEEN YEARS

1. Interprets a picture where there is some action or emotion expressed.
2. Interchanges the hands of a clock for the hour of six-twenty; for two-fifty-six.
   Child must not see a watch or clock. Question: "Can you think how the clock looks when it is twenty minutes past six? (or four minutes before three?) What time would it be if the long hand and the short hand changed places?"
3. Writes in code.
   (Give a simple code, and ask child to write two or three words in code, as "Come quickly".)

4. Writes opposites to the following words; 1—good; 2—outside; 3—quick; 4—tall; 5—big; 6—loud; 7—white; 8—light; 9—happy; 10—false; 11—like; 12—rich; 13—sick; 14—glad; 15—thin; 16—empty; 17—war; 18—many; 19—above; 20—friend.
(The equivalent of seventeen correct answers must be given.)

ADULT (SIXTEEN YEARS)

1. Solves the paper cutting test.
(Fold piece of paper in four, and cut notch in one edge, the edge that does not open. Have subject draw a picture of what the paper will look like when unfolded. (Fig. 8.)
2. Reverses the triangles on a card cut diagonally across.
(Cut a visiting card along the diagonal. Ask the subject to describe the resulting shape if one of the triangles were turned about and placed so that its short leg was on the other hypotenuse, and its right angle at the smaller of the two acute angles.)
3. Gives differences in meaning of abstract words, such as "pleasure and honor"; "evolution and revolution"; "event and advent"; "poverty and misery"; "pride and pretention".
(Two correct responses required.)

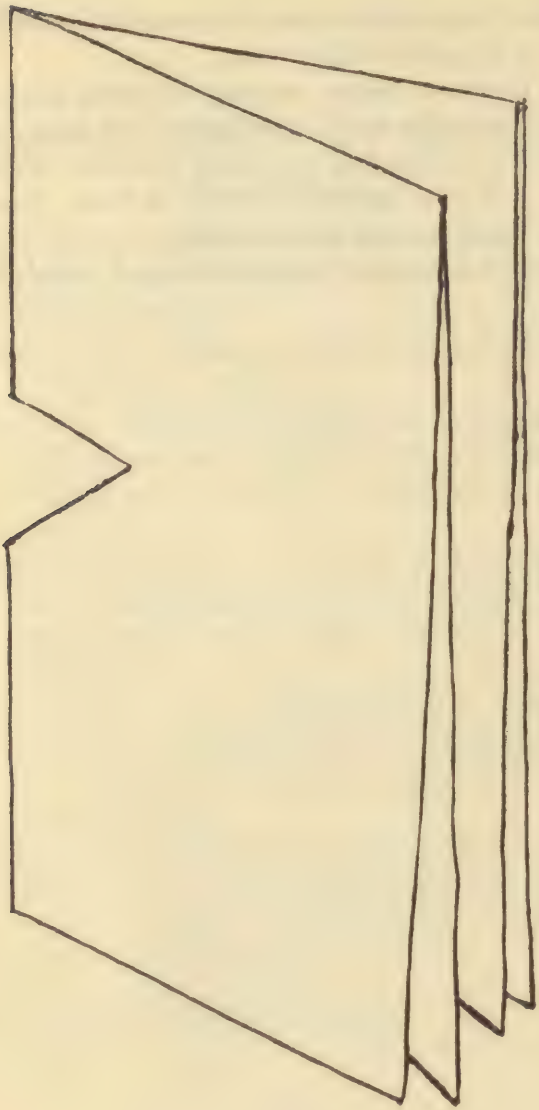


Fig. 9.—Age Fifteen Years. No. 1.

4. Gives three differences between the President of a Republic and a King.
   (Answer should contain the three ideas:
   Royalty is (1) hereditary, (2) lasts for life, (3) king has extended powers. President is (1) elected, (2) for definite time, (3) powers are less extended.
5. Gives the sense of a selection read aloud to him.

* MENTAL AGE—ONE AND TWO YEARS

(For Idiots)

1. Move lighted match slowly before child's eyes. (*Full credit given if eyes follow light for briefest period.*)
2. Place a wooden block in child's hand (*Credit given if block is grasped.*)
3. Show the wooden block without touching child with it, and say: "This is for you, don't you want it to play with?" (*Credit given if child takes it.*)
4. Offer child a piece of wood and a piece of chocolate of the same size. (*Credit given if he eats the chocolate and does not attempt to eat the wood.*)
5. Show child a piece of chocolate, then wrap it in paper and present it to him, telling him to eat it. (*Credit given if he removes the paper before eating.*)
6. Make simple movements, clapping the hands, sitting down, standing up, etc., and tell the child to do the same. (*Credit given if one intention is accomplished.*)

* These tests for children of 1 and 2 years are taken from the 1905 series of *L'Année Psychologique* 11, page 199.

GLOSSARY

Abasia—inability to walk, with or without loss of coördination.

Absent-minded—lacking concentration.

Acromegaly—enlargement of face, hands and feet.

Adolescence—period from puberty and the end of childhood to full maturity.

Affection—feeling toward.

Alternating personality—dissociated brain paths, due to lapse of memory. Gives other sets of characteristics.

Analysis—tracing a thing to its source—separating into its component elements.

Anoci-association—freeing from harmful or painful nerve impulses by means of blocking the nerve tracts at the site of injury.

Apperception—recognizing and interpreting sensory impressions.

Ascent of childhood—period from two to seven years.

Astasia—inability to walk or stand.

Association—the connection of states of mind, thoughts, or reflexes, with one another.

Attention—that part of consciousness which is applied exclusively to some idea or object.

Auditory—pertaining to hearing.

Autogenetic—development of the individual.

Automatic—self-acting. Acting from habit.

Axis cylinder—the central conducting core of a nerve fiber.

Behaviorist—one who tests psychology by behavior.

Binet-Simon Tests—tests for mental age of normal or retarded children or adults.

Carious—pertaining to decay of the bony tissue.

Carnivorous—eating flesh.

Cerebrum—fore-brain, containing centres of thought.

Chorea—nervous disease; St. Vitus dance.

Cochlea—semicircular canals of the ear.

Cognition—knowledge of.

Complex—a combination of ideas suppressed in the subconscious, and producing symptoms.

Conation—action in regard to.

Concentration—focussing of attention on a given thought or object.

Consanguinity—blood relationship.

Contiguity—close proximity.

Cretinism—form of idiocy due to lack of thyroid secretion.

Critical words—those having special significance for the subject.

Deductive—arriving at a conclusion from knowledge of preceding facts.

Defensive reaction—response to stimulation in order to protect or oppose.

Delusion—a false mental impression, relating to ideas.

Dementia praecox—insanity characterized by introspection and retrogression, usually occurring in young persons.

Dendrite—branching process from a nerve cell.

Dual personality—(see "alternating personality").

Ectoderm—outer layer of the embryonic cells.

Edith Cavell—an English nurse shot by the Germans during the Great War.

Efferent—leading from the brain or spinal cord.

Embolism—formation of clot in the circulation.

Embryonic layers—the three primitive layers of the embryo from which all the tissues are developed.

Emotion—mental excitement—arousing of the mind.

Endocarditis—inflammation of the lining of the heart.

Endocrine—pertaining to the ductless glands.

Entoderm—inner layer of the embryonic cells.

Epilepsy—nervous disease, marked by convulsions and unconsciousness.

Epileptiform—resembling epilepsy.

Fechner's Law—law governing the intensity of a sensation in regard to its stimulus.

Fixation—retention of infantile traits instead of mental progression.

Galvanometer—instrument for detecting glandular secretion; also for galvanic electricity.

Group psychology—state of mind spreading through an assemblage of persons.

Hallucination—a sense perception not founded on objective reality.

Huntington's chorea—an adult form of chorea, marked by dementia.

Hyperesthesia—excessive sensitiveness of sensation.

Hypnoidization—semi-conscious state.

Hysteria—disturbed emotional condition characterized by loss of self-control.

Idiot—having a mental age of not more than two years.

Illusion—a false interpretation of a sensation, especially of sight or hearing.

Imbecile—having a mental age of from two to seven years.

Impulse—sudden motive inciting to action.

Incentive—that which rouses to action or determination.

Incorrigibility—state of persisting in wrong doing; being incapable of correction.

Inductive—reaching a conclusion by inference; reasoning from a part to the whole.

Infancy—stage from birth to two years.

Inference—that which is drawn from another fact; a conclusion.

Inhibit—to check; to repress.

Instinct—natural impulse prompting to an action without conscious thought or reasoning.

I. Q.—intelligence quotient.

Intelligence Quotient—percental result found by dividing the mental age by the age in years.

Intuition—knowledge arising from the subconscious.

Jacksonian epilepsy—form of epilepsy due to pressure on the brain.

Kinesthetic—pertaining to articular, tendonous and muscular sensation; applying to sense of weight, action of joints, and muscular activity.

Leucocyte—a white blood cell having power of independent locomotion.

Libido—the expression of primitive wishes and needs; the life force.

Logical memory—memory due to association.

Lomi-lomi—form of massage used in Hawaii.

Mania—form of insanity, characterized by excitement.

Melancholia—functional insanity, characterized by depression.

Memory—the power to reproduce former ideas, sensations or impressions.

Menopause—natural cessation of menstruation; change of life.

Mesoderm—the middle layer of embryonic cells.

Migraine—periodic sick headache.

Moral imbecile—one who has irrepressible criminal tendencies.

Moron—having a mental age of from seven to twelve years. "High grade moron", one who is from one to three years behind normal mental age.

Myocarditis—inflammation of the heart muscle.

Myxedema—general swelling due to oversecretion of thyroid.

Neuroglia—supporting tissue of brain and nervous system.

Neurone—a nerve cell.

Neuropathic—pertaining to nervous disorder.

Neurasthenia—nervous exhaustion.

Neurosis—nervous or functional disease, giving physical symptoms without other cause, and without lesion of the nervous system.

Objective—outside of oneself; perceptible to the senses of others.

Organotherapy—treatment by animal extracts, chiefly glandular.

Paranoia—form of insanity.

Paresis—general paralysis.

Perception—recognition of a sensory impression.

Periphera—the outer part; the surface.

Petit mal—form of epilepsy without convulsions.

Philogenetic—pertaining to the development of the race.

Phobias—irrational fears.

Plasticity—native ability of brain to receive and retain impression.

Plateau of childhood—stage from seven to eleven or twelve years.

Pneumograph—apparatus for measuring respiration.

Pre-natal—before birth; during pregnancy.

Pre-pubescence—stage from eleven years to puberty.

Primogeniture—seniority by birth.

Psychasthenia—pertaining to mental disorder without bodily symptoms.

Psychiatric—pertaining to mental disease.

Psychic censor—that part of the mind which holds back thoughts in the subconscious.

Psycho-analysis—method of analyzing ideas and mental states by tracing back to their causes.

Psycho-analyst—one who uses psycho-analysis.

Psycho-neurosis—mental disorder giving bodily symptoms.

Psychopath—person suffering from mental disorder.

Pubescence—the physical aspect of sex maturity; it is a part of adolescence.

Recall—to bring back in memory.

Recollection—assembling facts or ideas in the conscious mind.

Reflex arc—the tract in the nervous system traversed by a reflex action.

Rote memory—mechanical memory, without associations.

Segregate—to set apart in a group by itself.

Sentient—having consciousness, or sensation.

Similarity—the quality of being alike.

Simile—a comparison.

Spastic paralysis—birth injury, characterized by spasms.

Sphygmograph—apparatus for measuring arterial pulse.

Stasis—stoppage.

Stimulate—to excite to action.

Subconscious mind—that part of the mind which is not included in consciousness or attention.

Subjective—pertaining to oneself.

Suggestion—treatment by impressing ideas upon the mind, either through oneself or another.

Synapse—meeting point of dendrites of nerve cells.

Syncope—sudden failure of heart action.

Tabes dorsalis—locomotor ataxia.

Threshold—the point at which consciousness begins; the lowest point of consciousness.

Tic—twitching, as of the face.

Toxin—poisonous albumen produced by bacteria.

Traumatic—due to injury.

Truant—one who habitually runs away from school.

Unity of consciousness—ideas and emotions regarded as a whole; mental continuity.

Variety of consciousness—ideas and emotions forming a state of mind regarded as separate units.

Vegetative instincts—sleep, hunger and thirst.

Visual—pertaining to sight.

Weber's Law—the law that for sensation to increase by equal amounts, the stimulus must increase by geometric progression. Associated with Fechner's law. Also called "psycho-physical law".

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